المراجعة رقم (1)

الترم الاول

First term Questions Bank

Question 01 Choose the correct answers

1. We can distinguish between ..... through thermal conductivity.
   (a) iron and copper (b) rubber and plastic (c) copper and rubber (d) silver and iron

2. ..... is from substances that can be separated by chemical methods.
   (a) Red mercuric oxide (b) Table salt solution (c) Iron filings and sand (d) oil and water

3. Sphinx statue consists of rocks made up of .....
   (a) sand stone (b) Lime stone (c) granite (d) basalt

4. The molecular formula of a compound resulting from the combination of an element (X) from alkali metals with an element from halogens (Y).
   (a) YX_2 (b) YX (c) X_2Y (d) XY

5. Iodine is .....
   (a) trivalent (b) divalent (c) monovalent (d) zero

6. The model of ..... is the first model for the atom on an experimental b
   (a) Dalton (b) Mendeleev (c) Rutherford (d) Moseley

7. The element whose atomic number is (17) forms a covalent bond with the element whose atomic number is .....
   (a) 1 (b) 11 (c) 12 (d) 13

8. Salt solution can be separated through .....
   (a) filtration process (b) magnetic attraction (c) evaporation and condensation (d) precipitation process

9. The atom consists of positively charged .....
   (a) electrons (b) neutrons (c) nucleus (d) levels

10. The molecular formula for a compound that consists of one nitrogen atom, one hydrogen atom and three oxygen atoms is .....
    (a) HO_3N (b) HNO_3 (c) O_3HN (d) NHO_3

11. ..... is from polyatomic element molecules.
(a) carbon (b) oxygen (c) ozone (d) iron

12. Negatively charged particles that revolve around the nucleus are .....
(a) protons (b) electrons (c) neutrons (d) particles

13. The closest inert gas to the element ($_{20}Ca$) .....
(a) Helium (b) Neon (c) Argon (d) Krypton

14. The toothpaste is colored with ..... color on adding a litmus paper on it.
(a) blue (b) red (c) violet (d) green

15. The mass of subatomic components is measured in atomic mass unit and its symbol is .....
(a) U (b) Y (c) W (d) H

16. The bond that forms between two atoms of halogens element is ..... covalent bond.
(a) Single covalent (b) Double covalent (c) Triple covalent (d) Ionic

17. Balloons can be filled with ..... gas.
(a) oxygen (b) nitrogen (c) chlorine (d) helium

18. The chemical symbol of potassium is .....
(a) B (b) P (c) K (d) Po

19. An atom of element (A) from the fifth group is linked to three hydrogen atoms to form a compound with the formula ..... and the bond in the molecules is .....
(a) AH - single covalent (b) HA_3 - triple covalent (c) HA - single covalent (d) AH_3 - triple covalent

20. ..... is considered from the compounds.
(a) ozone (b) iron (c) mercury (d) Egyptian indigo dye

21. The chemical symbol of lead element is .....
(a) Bp (b) Pb (c) Le (d) Bb

22. The number of atoms in sulphuric acid molecule H_2SO_4.
(a) 5 (b) 8 (c) 7 (d) 6

23 The number of bonds in a methane molecule is ..... single covalent bond(s).

(a) One (b) Two (c) Three (d) Four

24 NPK fertilizer consists of ..... element that helps to make the plant leaves green.

(a) K (b) N (c) P (d) F

25 An atom of ..... changes into positive ion when it loses an electron.

(a) Metal (b) Non-metal (c) Inert gas (d) Halogens

26 ..... element is necessary for strengthen roots of plants.

(a) K (b) N (c) P (d) F

27 The molecules of the following organic compounds consists of thousands of atoms except .....

(a) hemoglobin (b) plastic polymer (c) methane (d) vitamin D

28 Inside the nucleus of the atom, mostly the number of ..... is more than or equal the number of protons.

(a) atomic number (b) electrons (c) neutrons (d) particles

29 The ion whose nucleus contains 27 nucleons, including 14 neutrons, has the symbol.

(a) Si^{+4} (b) Al^{+3} (c) Mg^{+2} (d) Na^{+1}

30 An element contains 20 nucleons and number of negative charges is 9 so the number of neutral charges is .....

(a) 12 (b) 10 (c) 11 (d) 9

31 The atomic number of the most active halogen is .....

(a) 19 (b) 35 (c) 17 (d) 9

32 An atom of element its electrons revolves around it three energy levels and the outermost energy level contains 2 electrons so its atomic number is .....

(a) 2 (b) 12 (c) 14 (d) 8

33 An atom of ..... changes into negative ion when it gains an electron.

(a) Alkaline earth metals (b) Alkali (c) Inert gas (d) Halogens

34 An element from alkaline earth metals forms ionic bond with an element in group .....

(a) 5A (b) 6A (c) 7A (d) 0

35 An element its outermost energy level (L) contains a number of electrons equals number of electrons in the level (K) so its atomic number is .....

(a) 4 (b) 6 (c) 8 (d) 12

36 The number of electrons in the potassium ion (19K) is ..... electron.

(a) 8 (b) 18 (c) 19 (d) 20

37 The number of positive protons represents the .....

(a) atomic number (b) mass number (c) number of levels (d) number of elements

38 If the last energy level of a halogen atom is the level L, its atomic number is

(a) 7 (b) 9 (c) 17 (d) 19

39 The number of energy levels in a hydrogen ion ..... of its atom.

(a) Greater (b) Less (c) Equal (d) Twice

40 An element its outermost energy level (M) contains one electron, so its atomic number is .....

(a) 3 (b) 9 (c) 11 (d) 19

41 The number of electrons in outermost energy level of the oxygen ion ($_8O$) is ..... electron.

(a) 8 (b) 6 (c) 4 (d) 10

42 Deuterium is considered from the isotopes of ..... element.

(a) oxygen (b) nitrogen (c) hydrogen (d) carbon

43 The valency of argon is .....

(a) 0 (b) 1 (c) 6 (d) 8

44 ..... is considered from homogeneous mixtures.

(a) Salt solution (b) A mixture of oil with water (c) A mixture of iron filings and sawdust (d) A mixture of sand and water

47 The number of energy levels in the Sulphur ion ($_{16}S$) is ..... than energy levels in its atom

(a) Greater (b) Less (c) Equal (d) Twice

48 When an atom turns into a positive ion, the number of electrons .....

(a) decreases (b) increases (c) remains the same (d) double

49 From molecules that consists of the same type of atoms is ..... molecule.

(a) HCl (b) H_2O (c) O_2 (d) NH_3

50 The bond formed between alkali element and halogen element is ..... bond

(a) Single covalent (b) Double covalent (c) Triple covalent (d) Ionic

51 All the following are physical properties of a piece of calcium carbonate except that it .....

(a) is solid (b) does not dissolve in water (c) is white in colour (d) Produce gas bubbles with vinegar

52 ..... can be decomposed through electrolysis by using Hoffman's voltammeter

(a) water (b) mercuric oxide (c) carbon (d) nitric acid

53 The weak electric charge is measured by..... device

(a) Coulomb meter (b) Lightning rod (c) Electroscope (d) Voltmeter

54 All of the following are forms of artificial magnets except.....

(a) Magnetic needle (b) Bar magnet (c) Horseshoe (d) Aluminum piece

55 A positive electric charge is formed at the rod that made of ..... when we rub it with a piece of silk

(a) Glass (b) Ebonite (c) Copper (d) cotton

56 ..... is from magnetic materials

(a) Gold (b) Silver (c) Copper (d) Cobalt

57 When we rub a rod of ebonite with silk ..... transferred from silk to ebonite.

(a) protons (b) electrons (c) neutrons (d) Atoms

58 .....is from non-magnetic materials

(a) Iron (b) Nickel (c) Aluminum (d) Cobalt

59 The strength of the magnet increases in the..... of the magnet.

(a) Middle (b) Edge (c) Side (d) Surface

60 A rod made of ..... can be charged with a static charge when rubbed with a suitable material, provided that the hand-held part is insulated.

(a) Iron (b) Glass (c) Ebonite (d) Plastic

61 .....is an ancient tool used to determine directions.

(a) Compass (b) Hourglass (c) Sundials (d) balance

62 The electrostatic series is the arrangement of some materials according to the ease of losing ..... from them.

(a) Protons (b) Electrons (c) Neutrons (d) Molecules

63 ..... forces affecting certain dimension such as gravitational forces and electromagnetic forces.

(a) Flexibility (b) Collision (c) Friction (d) Field

64 The magnetic field lines crowd together at.....

(a) North Pole only (b) North and South Poles (c) Magnet tip (d) South Pole only

65 ..... is used to protect constructions and buildings from lightning strikes.

(a) Coulomb meter (b) Electroscope (c) Lightning rod (d) Voltameter

66 The scientist ..... discovered that all material objects attract each other.

(a) Rutherford (b) Newton (c) Coulomb (d) Moseley

67 ..... is an example of contact forces.

(a) Gravity (b) Electromagnetic (c) Friction (d) Electrostatic

68 The ..... device is used to indicate the electrical state of the body.

(a) Hoffman voltameter (b) Electroscope (c) Lightning rod (d) Voltameter

69 An object its weight on the Earth's surface equals 60 newtons, so its mass equals .....

(a) 60 kg (b) 6 kg (c) 6 N (d) 40 kg

70 ..... is an example of field forces.

(a) Gravity (b) Contact (c) Friction (d) Flexibility

71 The intensity of the gravitational field on the moon is equal to ..... The intensity of the gravitational field on the earth

(a) ½ (b) ¼ (c) 1/6 (d) 1/8

72 The phenomenon of tides occurs ..... daily

(a) Once (b) Twice (c) Three times (d) Four times

73 The ratio between the weight of an object at the base of a mountain to its weight at its top is ..... one.

(a) greater than (b) Less than (c) equals to (d) double

74 An object of mass 5 kg, so its weight on Earth's surface equals ..... newton

(a) 5 N (b) 50 N (c) 40 N (d) 50 Kg

75 Tides are most active when the moon is shaped like .....

(a) Full moon (b) crescent (c) First quarter (d) Last quarter

76 Earth's lines of gravitational forces are represented by..... lines

(a) Magnetic field (b) Electric field (c) Gravitational field (d) The length

77 ..... is used in purifying the blood from toxin

(a) Hoffmann voltammeter (b) Electroscope (c) Dialysis (d) Coulomb meter

78 ..... plant open its leaves during the day and closes them at night.

(a) Gazania (b) Mimosa (c) Sunflower (d) Cotton

79 The building unit of a living organisms is .....

(a) Matter (b) Cell (c) Atom (d) Tissue

80 A group of different tissues can form a (an) .....

(a) Organ (b) System (c) Organism (d) Tissue

81 A group of organs form .....

(a) Organ (b) System (c) Tissue (d) Organism

82 All the following organisms are consumers except.....

(a) Human (b) Birds (c) Fish (d) Plants

83 All the following organisms are producers except.....

(a) Beans (b) Cat (c) Green algae (d) Wheat

84 ..... are multicellular organisms.

(a) Bacteria (b) Paramecium (c) Amoeba (d) Mushroom fungus

85 Unicellular organisms include all of the following organisms except .....

(a) Bactria (b) Paramecium (c) Amoeba (d) Mushroom fungus

86 Euglena is a ..... organism

(a) Protozoa (b) Prokaryotes (c) Unicellular (d) Multicellular

87 Insects breathe by.....
(a) Lungs (b) Skin (c) Skin and lungs (d) Tracheal tubes

88 Dogs breathe by.....
(a) Lungs (b) Skin (c) Skin and lungs (d) Tracheal tubes

89 Mushroom fungus is a ..... organism
(a) Protozoa (b) Prokaryotes (c) Unicellular (d) Multicellular

90 All the following are found in the cell of bird's body except .....
(a) Cell wall (b) Nucleus (c) Golgi apparatus (d) Centrosome

91 Amoeba moves by.....
(a) Cilia (b) Flagellum (c) Pseudopodia (d) Fins

92 Paramecium moves by.....
(a) Cilia (b) Flagellum (c) pseudopodia (d) Fins

93 All the following are found in the cells of the bean plant except .....
(a) Cell wall (b) Nucleus (c) Golgi apparatus (d) Centrosome

94 All the following is found in bacterial cells except .....
(a) Cell wall (b) Cytoplasm (c) Golgi apparatus (d) Plasma membrane

95 Chloroplast contains ..... which absorbs light energy from the sun.
(a) Chlorophyll (b) Nucleus (c) Bacteria (d) Mitochondria

96 The adult frog breathes by .....
(a) Lungs (b) Skin (c) Skin and lungs (d) Tracheal tubes

97 Plants get oxygen from air by .....
(a) Plastids (b) Stomata (c) Mitochondria (d) Nucleus

98 The process of food breakdown and energy release occurs in .....
(a) Plastids (b) Stomata (c) Mitochondria (d) Nucleus

99 Leaves of ..... plant are drooping and dangling when you touch it.
(a) Gazania (b) Mimosa (c) Sunflower (d) Cotton

100 Sweat glands excrete ..... through the skin.
(a) Urine (b) Carbon dioxide (c) Wastes (d) Water

101 ..... is considered the closest celestial body to Earth.

(a) Venus (b) Mars (c) moon (d) sun

102 The moon is in second quarter after it is full ..... revolution around the Earth

(a) 1/4 (b) 1/2 (c) ¾ (d) 1

Question 02 put (true) or (false)

1. The chemical symbol of sodium element is S. ( )
2. Methane is considered from inorganic compounds ( )
3. The electronic configuration for an element that contains 15 neutrons and 14 protons has three energy levels. ( )
4. Ionic bond occurs between non-metals and non-metals. ( )
5. Electrons are found inside the nucleus. ( )
6. The outermost level in the nitrogen ion ($_7N$) contains 5 electrons ( )
7. The covalent bond occurs between two metals. ( )
8. Table salt solution can be separated by filtration. ( )
9. The atom is the building unit of the matter. ( )
10. Helium gas is used in filling car tires. ( )
11. Density and melting points from the chemical properties of the matter ( )
12. The outermost energy level of magnesium contains 2 electrons ( )
13. The bond between the elements of the sixth group and the elements of the seventh group is ionic. ( )
14. The energy level K is the largest level in energy. ( )
15. There are four main energy levels around the nucleus ( )
16. The third energy level is saturated with 18 electrons ( )
17. Oxygen is considered from mixtures. ( )
18. The charge and magnitude of protons is larger than electrons. ( )
19. The bond in the sodium molecule is double covalent. ( )
20. The bond between carbon and oxygen in the methane molecule is a single covalent bond. ( )

21. The atomic weight is larger than atomic number for all elements. ( )
22. The closest inert gas to the sodium atom ($_{11}$Na) is helium. ( )
23. Heterogeneous mixtures can't be separated by physical means. ( )
24. The bond in the potassium chloride molecule is covalent. ( )
25. From organic compounds is NaHCO3. ( )
26. Jupiter is similar to Mercury and Uranus in the composition of its atmosphere. ( )
27. The length of the shadow can be relied upon to determine the time. ( )
28. The Earth rotates on its axis every 365.5 days. ( )
29. The Earth rotates around its horizontal axis every 24 hours ( )
30. The four planets closest to the sun have thick crusts except for Venus. ( )
31. The length of the shadow formed at sunset is the greatest possible. ( )
32. Crop planting seasons vary according to the seasons of the year. ( )
33. The apparent height of the sun is lowest in winter ( )
34. The successive of seasons leads to a change in temperature ( )
35. Spring begins after the winter solstice ( )

Question 03 complete the following questions

1. The bond in the hydrogen molecule is ..... covalent bond, while the bond in the nitrogen molecule is ..... covalent bond.
2. ..... are different forms for one element having the same atomic number and different in ..... number.
3. An element its nucleus contains 27 nucleons and number of neutrons is 14 so number of electrons is .....
4. The molecules of materials are different in ..... and ..... of atoms and the way they are linked together
5. The bond in the hydrogen chloride molecule is ....., while the bond in the sodium chloride molecule is .....
6. The scientific basis in which Moseley's periodic table is made was arranging elements according to their .....
7. The number of electrons necessary to saturate the first four energy levels can be determined by the mathematical relation .....

8. The difference in the bonding of atoms with each other leads to the difference in the ..... and ..... properties of the molecules of the compound resulting.
9. The melting point of ionic compound is ....., while the melting point of covalent compound is .....
10. The number of main energy levels is .....
11. Types of chemical bonding are ..... bonding and ..... bonding.
12. The elements of the same groups have the same ..... and .....
13. When Aluminum atoms ($_{13}Al$) is converted into a ..... ion the number of electrons in its ion is .....
14. The scientific basis in which Mendeleev's periodic table is made was arranging elements according to their .....
15. An atom becomes a positive ion when ..... electron.
16. The second energy level is .....
17. The scientist Moseley discovered that the properties of the elements are related to its ..... not to ..... as Mendeleev believes.
18. The number of elements in the first period is ..... while the number of elements in in the fourth period is .....
19. An atom changes into ..... ion when it gains one or more electron.
20. An element its atomic number is 8 so its electronic configuration .....
21. The closest inert gas to sodium is ....., while the closest inert gas to chlorine is .....
22. ..... are chemical compounds used in improving agricultural production.
23. The boiling point of bromine is ..... the boiling point of chlorine.
24. The ..... bond arises due to the ..... attraction between positive ion and negative ion.
25. The block-p starts with group ..... and ends with group .....
26. Transition elements start to appear from period number ..... and their block consists of ..... groups.
27. NPK fertilizer consists of ..... which is necessary for strengthen the roots.
28. The chlorine atom is bonded to the sodium atom by the ..... bond.
29. The outermost energy level for any atom doesn't contain more than ..... electrons
30. The elements of ..... block are located in the middle of the periodic table and it contains ..... Group(s).

31. The number of energy levels in sodium atom is ..... than the number of energy levels in its ion
32. The chemical symbol for ..... element is Ag.
33. The elements of halogens and Nobel gases are located in block .....
34. The number of energy levels in the chlorine atom equal to the number of energy levels in its .....
35. The chemical symbol of potassium is .....
36. The Nobel gases are located in ..... block and it contains ..... group(s).
37. The ..... bonding arises from two atoms of the same non-metallic element or between two non-metallic atoms of two different elements
38. The electrons revolve around ..... with a very high speed.
39. The modern periodic table consists of ..... Periods and ..... groups.
40. The chemical activity of alkali metals ..... as we move from up to down while the chemical activity of halogens ..... as we move from up to down.
41. The second period starts with elements of group ..... and ends with elements of group .....
42. Helium is used to fill ..... while nitrogen gas is used to fill .....
43. All elements of ..... block are metals except ..... that is considered a non-metal gas.
44. The atomic radius is measured by a unit called .....
45. Each period ends with the elements of group ..... and this group is preceded by group .....
46. The number of atoms in a single molecule in some polar compounds may reach several thousand, as in ..... and .....
47. The atomic radius is ..... propotional with the atomic number of the element in the same period.
48. Water can be separated into its components using a device called .....
49. Mixtures are classified into ..... and .....
50. The modern periodic table consists of ..... blocks.
51. Water is decomposed by electrolysis into two elements ..... and.....
52. Molecules of ..... consists of atoms of the same type, while molecules of ..... consists of atoms for different elements
53. ..... mixtures cannot be distinguished by the naked eye.
54. Silicon and germanium are considered as .....

55 Red mercury oxide can be decomposed into ..... and ..... by heating.

56 All matters are composed of small, similar units called .....

57 ..... are substances that cannot be separated into their components by chemical or physical methods.

58 Iron and cork can be distinguished by the difference in .....

59 Methane is from ..... molecules, while nitric acid is ..... molecule.

60 From the rubbing electrostatic materials are ....., ...and cotton.

61 When rubbing ebonite rod with a piece of wool and the ebonite rod acquires ..... electric charge, While the piece of wool acquires ..... electrical charge.

62 The electrostatic series is the arrangement of some materials according to their easiness of ..... electrons.

63 From the forms of industrial magnets are bar magnet..... and .....

64 Different electrical charges ....., while similar electrical charges .....

65 The electroscope is used to detect the presence of a ..... on a body and determine its .....

66 A magnet has two poles which are ..... pole and ..... pole

67 The electrical charges accumulated on the surfaces of objects are known as ..... electricity.

68 Electric force lines are ..... lines that do not intersect with each other.

69 The force of attraction of a magnet is greatest at ..... and decreases when approaching to .....

70 Weak electrical charges are measured by .....

71 Objects that can be charged with a static electric charge can be made of non-conductive materials such as ..... and .....

72 The compass is a freely moving ..... magnet fixed at .....

73 The compass box is made of ..... or .....

74 During metal plating by electrostatic plating, the required painted object is charged with ..... electric charge while the spray paint is charged with a ..... electric charge.

75 When a magnet is suspended freely, it takes the direction of ..... and .....

76 Magnetic field lines start from the ..... pole and end at the ..... pole outside the magnet .

77 ..... is a system used to protect buildings and constructions from lightning strikes.

78 The electric force lines end at ..... of charged metal objects and do not penetrate them.

79 Electric power lines start from the ..... charge and end at the ..... charge.

80 The North magnetic pole is represented by the symbol....., while the South magnetic pole is represented by the symbol.....

81 The electroscope device is known as .....

82 The greater the mass of the two objects, the ..... the force of attraction between them.

83 ..... magnetic poles repel each other, while different poles .....

84 The greater the distance between the two objects. The ..... the gravitational force between them.

85 Black holes are formed when a ..... collapse at the end of its life

86 When a magnet is divided into several parts, each part becomes a new .....

87 The phenomenon of tides can be used in ..... as one of the renewable energy sources

88 ..... is the revolution of any object in space along a curved path around central object.

89 The force affecting the falling of an apple to the ground is the ..... force.

90 The phenomenon of tides is used to purify the ..... from impurities.

91 The rotation of electrons around the nucleus of an atom is an example of .....

92 ..... force are those that act on objects upon contact, such as ..... force, ... force and ..... force

93 ..... is used to measure the weight of objects

94 Earth's gravitational force is expressed by lines of .....

If the mass of an object is (500 g), then its weight is .....

95 Knowing that the gravitational field strength on the Earth's surface is (10N/Kg)

96 Weight = ... X .....

97 The measuring unit of weight is ....., while the measuring unit of mass is .....

98 Veins transport ..... and ..... from ..... to .....

99 The building unit of a living organism is .....

100 ..... controls the opening and closing of the stomata.

101 The crust of the ..... planet is thicker than the crust of the Venus planet .

102 The duration of day and night is nearly equal in seasons of ..... and .....

Question 04 write the scientific term for each of the following

1 A type of fertilizers contains nitrogen, phosphorus and potassium. ( )

2 Number of proton found inside the nucleus of the atom. ( )

3 Different forms from elements having the same atomic number and different atomic masses. ( )

4 A semi-metal used in the manufacture of electronic chips. ( )

5 It is everything that has a mass and occupies a space ( )

6 A metal atom that has lost one electron or more. ( )

7 A non-metallic atom has gained one electron or more. ( )

8 The building unit of the matters. ( )

9 The properties that only appear when a chemical reaction occurs that leads to a change in the shape and composition of the substance. ( )

10 The difference between atomic mass and atomic number. ( )

11 A pure substance formed as a result of the chemical union of two or more elements in a fixed mass ratio, and its components can be separated by various methods ( )

12 The scientist who made the first scientific theory about the atom. ( )

13 An alloy that maintains its strength at high temperatures and is used in the manufacture of military aircraft structures. ( )

14 Chemical compounds used in improving the agricultural productivity. ( )

15 The simplest pure form of matter where components cannot be separated by physical or chemical methods. ( )

16 Particles that include protons, neutrons and electrons. ( )

17 The space that contains protons and neutrons. ( )

18. Properties that can be observed and some of them can be measured. ( )
19. An element necessary for greening of plant leaves ( )
20. Particles whose mass can be neglected while its charge can't. ( )
21. Paths in which electrons revolve around the nucleus. ( )
22. The summation of numbers of both protons and neutrons ( )
23. Mixtures whose components can be distinguished with the naked eye. ( )
24. Positively charged particles located inside the nucleus. ( )
25. A bond that results from electrical attraction between a positive ion and a negative ion. ( )
26. A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule. ( )
27. Particles whose charge can be neglected while its mass can't ( )
28. Materials composed of two or more substances that are not chemically combined. ( )
29. An element necessary for strengthening roots ( )
30. An element necessary for healthy plant growth. ( )
31. A bond that results from sharing each atom with one electron. ( )
32. Compounds that dissolve in water and conduct electricity. ( )
33. A bond that results from sharing each atom with three electrons ( )
34. The simplest molecule of an organic compound in which a carbon atom is bonded to four hydrogen atoms ( )
35. Compound that conduct electricity but are poor electrical conductors. ( )
36. A bond that results from sharing each atom with two electrons. ( )
37. A bond that forms between two atoms of different non-metallic elements or between two similar atoms of a non-metallic element. ( )
38. System used to protect buildings and constructions from lightning strikes. ( )
39. Device used to determine the type of electric charge. ( )
40. A natural stone that has the ability to attract objects made of iron. ( )

41. Similar poles repel and different poles attract. ( )
42. Materials that are not attracted to the magnet ( )
43. Electrical charges accumulated on the surfaces of objects when electrons are lost or gained. ( )
44. Materials that are attracted to the magnet ( )
45. Imaginary lines representing the strength of the magnetic field. ( )
46. Arrangement of some materials according to how easily they lose electrons. ( )
47. The area surrounding electric charges where their effect is appeared without contact. ( )
48. An ancient tool used to determine the four geographical directions. ( )
49. The device used to measure weak electric charges. ( )
50. Imaginary lines showing the path taken by a small, freely moving positive charge placed in it. ( )
51. The area surrounding the magnet where the effects of its magnetic force appear. ( )
52. Specialized cells in opening and closing stomata in plants ( )
53. Plants that open their leaves during the day and close them at night. ( )
54. The building units of a living organism. ( )
55. A group of similar cells that work together and perform one function. ( )
56. The process by which a living organism obtains the materials used to build its body and energy ( )
57. The substance that the plant makes to obtain energy. ( )
58. A group of different tissues that work together and perform one function. ( )
59. Organisms that breathe through skin and lungs ( )
60. The organ that gets rid of excess water, salts and urea in the form of urine. ( )
61. A group of different organs that work together. ( )
62. The process by which a plant converts light energy into chemical energy in the presence of water and carbon dioxide gas. ( )
63. A process by which a living organism gets rid of harmful waste and excess materials the body does not need. ( )

64. The arrangement of living organisms into groups according to their similarities and differences to ease their study and identification. ( )
65. Undifferentiated cells have the ability to transform into all differentiated cells of the body. ( )
66. Simple organisms whose body consists of a single, unspecialized cell. ( )
67. Complex organisms consisting of many cells that are distinguished and specialized in their work ( )
68. Plants that move with the movement of the sun. ( )
69. The planet that has a thin crust full of craters ( )
70. The season in which the number of daylight hours is greater than any other season of the year. ( )
71. The planet is mainly composed of oxygen and nitrogen gases. ( )
72. The season in which the number of night hours is greater than the number of day hours ( )

Question 05 What is meant by:

1. Matter .....
2. Metals .....
3. Pure substances .....
4. Non-metals .....
5. Atom .....
6. Chemical properties .....
7. Valency .....
8. Physical properties .....
9. Atomic number .....
10. Atomic mass .....
11. Mendeleev's Periodic table .....
12. Picometer .....

13. Melting point .....
14. Modern periodic table .....
15. Isotopes .....
16. Element .....
17. Fertilizers .....
18. Boiling point .....
19. Moseley's Periodic table .....
20. Compound .....
21. Positive ion .....
22. Mixture .....
23. Negative ion .....
24. Homogeneous mixture Solution .....
25. Ionic bond .....
26. Heterogeneous mixture .....
27. Covalent bond .....
28. Molecular formula .....
29. Single covalent bond .....
30. Dalton .....
31. Magnetic materials .....
32. Static electricity .....
33. Non-magnetic materials .....
34. Magnetic field .....
35. Electrostatic series .....
36. Law of attraction and repulsion .....

37 Electric field .....

38 Electric field lines .....

39 Magnetic field lines .....

40 Field forces .....

41 Object's mass .....

42 Earth's gravitational forces .....

43 Object's weight .....

44 Contact forces .....

45 Prokaryotes .....

46 Eukaryotes .....

47 Classification .....

48 Autotrophs organisms .....

49 Heterotrophs organisms .....

50 Cellular respiration .....

51 Cell .....

52 Tissue .....

53 Organ .....

54 Unicellular organisms: .....

55 Multicellular organisms .....

56 Movement .....

57 moon .....

58 Umbra (shadow area) .....

59 Lunar eclipse .....

60 Transparent objects .....

61 Opaque objects .....

62 Partial eclipse .....

63 Total eclipse .....

Question 06 give reason for each of the following

1 The energy level (L) is saturated with 8 electrons.

.....

2 Calcium ($_{20}Ca$) is an element from alkaline earth metals.

.....

3 Iron filings can be easily separated from flour.

.....

4 The nucleus of the atom is positively charged.

.....

5 The level (M) is saturated first with electrons before the level (N).

.....

6 The mass of the atom is concentrated in its nucleus

.....

7 The nitric acid molecule is considered an inorganic compound molecule.

.....

8 Fluorine (9F) is an element from halogens.

.....

9 The difference in energy of energy levels in which electrons are revolved.

.....

10 Nitrogen is used to fill car tires instead of air.

.....

11 The bond in the sodium chloride molecule is ionic.

.....

12. A bond can form between two chlorine atoms, but a bond cannot form between two sodium atoms.

.....

13. Ionic compounds are neutral in charge.

.....

14. The atom is electrically neutral.

.....

15. The element isotopes have the same atomic number and different atomic masses.

.....

16. The symbol of sodium is Na not S as it is expected.

.....

17. Scientists had made many attempts for classifying elements.

.....

18. Helium gas is used to fill balloons.

.....

19. It is advised to reduce the use of lots of fertilizers.

.....

20. Moseley rearranges elements in his table according to their atomic numbers.

.....

21. Atomic mass is often greater than the atomic number.

.....

22. Stainless steel alloy is used in the manufacture of cookware.

.....

23. Calcium ($_{20}Ca$) is a metal.

.....

24. Atomic mass equals atomic number in hydrogen atom.

.....

25. The bond in a hydrogen chloride molecule is single covalent.

.....

26. Aircraft structures are made of aluminum and titanium alloy.

.....

27 Chlorine ($_{17}$Cl) is a non-metal.

.....

28 Atomic mass is double atomic number in $^{16}_{8}O$ atom.

.....

29 Sodium (11Na) is an element from alkali metals.

.....

30 It is difficult to identify metalloids from their outermost energy level.

.....

31 The bond in the water molecule is a single covalent

.....

32 The valency of Nobel gases is zero.

.....

33 The bond in the oxygen molecule is double covalent bond

.....

34 Aerogel is used in making jackets for research scientists in Antarctica.

.....

35 The bond in the nitrogen molecule is triple covalent

.....

36 The hydrogen molecule is considered an element molecule, while the sodium chloride molecule is a compound molecule.

.....

37 When a metal loses an electron, it turns into a positive ion.

.....

38 Seawater is considered a homogeneous mixture.

.....

39 Vitamin D is considered one of the important vitamins for the human body.

.....

40 Wood floats on the surface of the water while iron sinks in it.

.....

41 When a halogen gains an electron, it turns into a negative ion.

.....

42 The electrostatic electricity is called static electricity.

.....

43 It is preferable to paint metals using electrostatic painting method than other methods.

.....

44 Small paper scrapes are attracted to the ebonite rod when rubbed with silk.

.....

47 Lightning rods are used in buildings and constructions.

.....

48 Small paper scraps are not attracted to the copper rod when rubbed with wool.

.....

49 All objects fall downward to the Earth's center.

.....

50 Metal chains are hanged from fuel transport vehicles and touch the ground.

.....

51 The object has no weight in the outer space.

.....

52 The glass rod becomes positively charged when rubbed with silk.

.....

53 Nickel and Cobalt are considered as magnetic materials

.....

54 The weight of an object on the Earth's surface is greater than the weight of the same object on the Moon's surface.

.....

55 Aluminum and silver are non-magnetic materials

.....

56 Object's weight changes from one planet to another.

.....

57 Compass box is made of copper or plastic and not of iron

.....

58 The gravitational force between two objects increases when their masses increase

.....

59 Iron fillings are attracted in large amounts at each pole of the magnet

.....

60 Green algae are considered as producer organisms.

.....

61 Bacteria differ from euglena, although they are both unicellular organisms.

.....

62 Living organisms are classified according to similarities and differences.

.....

63 The food path in the digestive system is considered as a closed path.

.....

64 Rabbits are considered as consumer organisms.

.....

65 The lion is considered as a multicellular organism.

.....

66 Bacteria are considered as unicellular living organisms.

.....

67 Prokaryotes can't be stem cells

.....

68 Paramecium and Euglena are considered as unicellular organisms.

.....

69 The planets of the solar system do not collide with each other while orbiting the sun.

.....

70 The moon appears bright even though it is an opaque body

.....

71 The atmosphere of Uranus appears blue-green in color.

.....

72 Occurrence of partial lunar eclipse.

.....

73 The surface of Mercury is full of craters.

.....

Question 06 What happens if ..... ?

1 Bonding of two hydrogen atoms with an oxygen atom.

.....

2 To the acidified water if it is subjected to electrolysis.

.....

3 Bonding of two nitrogen atoms

.....

4 Bonding of two chlorine atoms.

.....

5 If the atomic radius Increase (according to boiling and melting points of halogens).

.....

6 If we use carbon dioxide gas to fill balloons

.....

7 If the atomic radius Increase (according to boiling and melting points of alkali metals

.....

8 If we manufacture iron cookware.

.....

9. If the number of electrons in the last energy level is complete with electrons for the type of element.

.....

10. Bonding of a chlorine atom with a hydrogen atom.

.....

11. If the number of electrons in the last energy level is greater than 4 electrons for the type of element.

.....

12. If we put a piece of wood in the water.

.....

13. If the number of electrons in the last energy level is less than 4 electrons for the type of element.

.....

14. Heating of red mercury oxide compound.

.....

15. To The atomic radius when increasing the atomic number of elements in one period from left to right.

.....

16. Bonding of a chlorine atom with a sodium atom.

.....

17. To The atomic radius when increasing the atomic number of elements of the same group from top to bottom.

.....

18. If we dip a sunflower leaf in a lemon juice.

.....

19. Bonding of two oxygen atoms

.....

20. Rub ebonite rod with a piece of silk and bring them close to each other

.....

21. Approaching a positively charged glass rod close to a negatively charged electroscope.

.....

22 Approaching a negatively charged ebonite rod close to an electroscope negatively charged.

.....

23 Hang a rod of ebonite after rubbing it with silk and bring a rod of glass close to it after rubbing it with silk.

.....

24 Dip a magnet in a box containing iron filings.

.....

25 Hang a rod of ebonite after rubbing it with silk and bring a rod of glass close to it without rubbing.

.....

26 Touching a charged flashlight disc with your hand.

.....

27 When a magnet is brought close to a mixture of iron filings and silver turnings

.....

28 Transferring an object from the moon's surface to the Earth's surface relative to its weight.

.....

29 When dividing a single magnet into several parts

.....

30 The absence of gravity.

.....

31 Bringing the south pole of a magnet closer to the north pole of another freely suspended magnet

.....

32 Increase in objects masses relative to gravitational force between them.

.....

33 Transferring an object from the moon's surface to the Earth's surface relative to its mass.

.....

34 Bring the south pole of a magnet closer to the south pole of another freely suspended magnet.

.....

35 Decrease the distance between the two objects relative to the gravitational force between them.

.....

36 The plant does not obtain carbon, hydrogen and oxygen elements.

.....

37 The absence of nodular bacteria on the roots of the bean plant.

.....

38 Do not add a spoonful of sugar to the saline solution used in making pickled olives.

.....

39 Eating food and water contaminated with Salmonella typhi bacteria.

.....

40 Leave the yogurt in a warm place for more than 5 hours

.....

41 Eating foods contaminated with Entamoeba histolytica bacteria.

.....

42 Do not keep yogurt in the refrigerator.

.....

43 The moon is entirely located in the Earth's shadow

.....

44 The Earth's rotation around the sun in a complete revolution.

.....

47 Equals the number of hours of night and day.

.....

48 Part of the moon is located in the penumbra of Earth.

.....

49 The Earth's rotation around its axis in a complete revolution.

.....

انتهت الأسئلة مع أطيب الامنيات بالنجاح والتوفيق

Answers

First term Questions Bank المتميز

Question 01 Choose the correct answers

We can distinguish between ..... through thermal conductivity.

1. (a) iron and copper (b) rubber and plastic (c) copper and rubber (d) silver and iron

..... is from substances that can be separated by chemical methods.

2. (a) Red mercuric oxide (b) Table salt solution (c) Iron filings and sand (d) oil and water

Sphinx statue consists of rocks made up of .....

3. (a) sand stone (b) Lime stone (c) granite (d) basalt

4. The molecular formula of a compound resulting from the combination of an element (X) from alkali metals with an element from halogens (Y).
(a) YX_2 (b) YX (c) X_2Y (d) XY

5. Iodine is .....
(a) trivalent (b) divalent (c) monovalent (d) zero

6. The model of ..... is the first model for the atom on an experimental b
(a) Dalton (b) Mendeleev (c) Rutherford (d) Moseley

7. The element whose atomic number is (17) forms a covalent bond with the element whose atomic number is .....
(a) 1 (b) 11 (c) 12 (d) 13

8. Salt solution can be separated through .....
(a) filtration process (b) magnetic attraction (c) evaporation and condensation (d) precipitation process

9. The atom consists of positively charged .....
(a) electrons (b) neutrons (c) nucleus (d) levels

10. The molecular formula for a compound that consists of one nitrogen atom, one hydrogen atom and three oxygen atoms is .....
(a) HO_3N (b) HNO_3 (c) O_3HN (d) NHO_3

11. ..... is from polyatomic element molecules.
(a) carbon (b) oxygen (c) ozone (d) iron

12. Negatively charged particles that revolve around the nucleus are .....
(a) protons (b) electrons (c) neutrons (d) particles

13. The closest inert gas to the element ($_{20}Ca$) .....
(a) Helium (b) Neon (c) Argon (d) Krypton

14. The toothpaste is colored with ..... color on adding a litmus paper on it.
(a) blue (b) red (c) violet (d) green

15. The mass of subatomic components is measured in atomic mass unit and its symbol is .....
(a) U (b) Y (c) W (d) H

16. The bond that forms between two atoms of halogens element is ..... covalent bond.
(a) Single covalent (b) Double covalent (c) Triple covalent (d) Ionic

17. Balloons can be filled with ..... gas.
(a) oxygen (b) nitrogen (c) chlorine (d) helium

18. The chemical symbol of potassium is .....
(a) B (b) P (c) K (d) Po

19. An atom of element (A) from the fifth group is linked to three hydrogen atoms to form a compound with the formula ..... and the bond in the molecules is .....
(a) AH - single covalent (b) HA_3 - triple covalent (c) HA - single covalent (d) AH_3 - triple covalent

20. ..... is considered from the compounds.
(a) ozone (b) iron (c) mercury (d) Egyptian indigo dye

21. The chemical symbol of lead element is .....
(a) Bp (b) Pb (c) Le (d) Bb

22. The number of atoms in sulphuric acid molecule H_2SO_4.
(a) 5 (b) 8 (c) 7 (d) 6

23 The number of bonds in a methane molecule is ..... single covalent bond(s).

(a) One (b) Two (c) Three (d) Four

24 NPK fertilizer consists of ..... element that helps to make the plant leaves green.

(a) K (b) N (c) P (d) F

25 An atom of ..... changes into positive ion when it loses an electron.

(a) Metal (b) Non-metal (c) Inert gas (d) Halogens

26 ..... element is necessary for strengthen roots of plants.

(a) K (b) N (c) P (d) F

27 The molecules of the following organic compounds consists of thousands of atoms except .....

(a) hemoglobin (b) plastic polymer (c) methane (d) vitamin D

28 Inside the nucleus of the atom, mostly the number of ..... is more than or equal the number of protons.

(a) atomic number (b) electrons (c) neutrons (d) particles

29 The ion whose nucleus contains 27 nucleons, including 14 neutrons, has the symbol.

(a) Si^{+4} (b) Al^{+3} (c) Mg^{+2} (d) Na^{+1}

30 An element contains 20 nucleons and number of negative charges is 9 so the number of neutral charges is .....

(a) 12 (b) 10 (c) 11 (d) 9

31 The atomic number of the most active halogen is .....

(a) 19 (b) 35 (c) 17 (d) 9

32 An atom of element its electrons revolves around it three energy levels and the outermost energy level contains 2 electrons so its atomic number is .....

(a) 2 (b) 12 (c) 14 (d) 8

33 An atom of ..... changes into negative ion when it gains an electron.

(a) Alkaline earth metals (b) Alkali (c) Inert gas (d) Halogens

34 An element from alkaline earth metals forms ionic bond with an element in group .....

(a) 5A (b) 6A (c) 7A (d) 0

35 An element its outermost energy level (L) contains a number of electrons equals number of electrons in the level (K) so its atomic number is .....

(a) 4 (b) 6 (c) 8 (d) 12

36 The number of electrons in the potassium ion (19K) is ..... electron.

(a) 8 (b) 18 (c) 19 (d) 20

37 The number of positive protons represents the .....

(a) atomic number (b) mass number (c) number of levels (d) number of elements

38 If the last energy level of a halogen atom is the level L, its atomic number is

(a) 7 (b) 9 (c) 17 (d) 19

39 The number of energy levels in a hydrogen ion ..... of its atom.

(a) Greater (b) Less (c) Equal (d) Twice

40 An element its outermost energy level (M) contains one electron, so its atomic number is .....

(a) 3 (b) 9 (c) 11 (d) 19

41 The number of electrons in outermost energy level of the oxygen ion ($_8O$) is ..... electron.

(a) 8 (b) 6 (c) 4 (d) 10

42 Deuterium is considered from the isotopes of ..... element.

(a) oxygen (b) nitrogen (c) hydrogen (d) carbon

43 The valency of argon is .....

(a) 0 (b) 1 (c) 6 (d) 8

44 ..... is considered from homogeneous mixtures.

(a) Salt solution (b) A mixture of oil with water (c) A mixture of iron filings and sawdust (d) A mixture of sand and water

47 The number of energy levels in the Sulphur ion ($_{16}S$) is ..... than energy levels in its atom

(a) Greater (b) Less (c) Equal (d) Twice

48 When an atom turns into a positive ion, the number of electrons .....

(a) decreases (b) increases (c) remains the same (d) double

49 From molecules that consists of the same type of atoms is ..... molecule.

(a) HCl (b) H_2O (c) O_2 (d) NH_3

50 The bond formed between alkali element and halogen element is ..... bond

(a) Single covalent (b) Double covalent (c) Triple covalent (d) Ionic

51 All the following are physical properties of a piece of calcium carbonate except that it .....

(a) is solid (b) does not dissolve in water (c) is white in colour (d) Produce gas bubbles with vinegar

52 ..... can be decomposed through electrolysis by using Hoffman's voltammeter

(a) water (b) mercuric oxide (c) carbon (d) nitric acid

53 The weak electric charge is measured by..... device

(a) Coulomb meter (b) Lightning rod (c) Electroscope (d) Voltmeter

54 All of the following are forms of artificial magnets except.....

(a) Magnetic needle (b) Bar magnet (c) Horseshoe (d) Aluminum piece

55 A positive electric charge is formed at the rod that made of ..... when we rub it with a piece of silk

(a) Glass (b) Ebonite (c) Copper (d) cotton

56 ..... is from magnetic materials

(a) Gold (b) Silver (c) Copper (d) Cobalt

57 When we rub a rod of ebonite with silk ..... transferred from silk to ebonite.

(a) protons (b) electrons (c) neutrons (d) Atoms

58 .....is from non-magnetic materials

(a) Iron (b) Nickel (c) Aluminum (d) Cobalt

59 The strength of the magnet increases in the..... of the magnet.

(a) Middle (b) Edge (c) Side (d) Surface

60 A rod made of ..... can be charged with a static charge when rubbed with a suitable material, provided that the hand-held part is insulated.

(a) Iron (b) Glass (c) Ebonite (d) Plastic

61 .....is an ancient tool used to determine directions.

(a) Compass (b) Hourglass (c) Sundials (d) balance

62 The electrostatic series is the arrangement of some materials according to the ease of losing ..... from them.

(a) Protons (b) Electrons (c) Neutrons (d) Molecules

63 ..... forces affecting certain dimension such as gravitational forces and electromagnetic forces.

(a) Flexibility (b) Collision (c) Friction (d) Field

64 The magnetic field lines crowd together at.....

(a) North Pole only (b) North and South Poles (c) Magnet tip (d) South Pole only

65 ..... is used to protect constructions and buildings from lightning strikes.

(a) Coulomb meter (b) Electroscope (c) Lightning rod (d) Voltameter

66 The scientist ..... discovered that all material objects attract each other.

(a) Rutherford (b) Newton (c) Coulomb (d) Moseley

67 ..... is an example of contact forces.

(a) Gravity (b) Electromagnetic (c) Friction (d) Electrostatic

68 The ..... device is used to indicate the electrical state of the body.

(a) Hoffman voltameter (b) Electroscope (c) Lightning rod (d) Voltameter

69 An object its weight on the Earth's surface equals 60 newtons, so its mass equals .....

(a) 60 kg (b) 6 kg (c) 6 N (d) 40 kg

70 ..... is an example of field forces.

(a) Gravity (b) Contact (c) Friction (d) Flexibility

71 The intensity of the gravitational field on the moon is equal to ..... The intensity of the gravitational field on the earth

(a) ½ (b) ¼ (c) 1/6 (d) 1/8

72 The phenomenon of tides occurs ..... daily

(a) Once (b) Twice (c) Three times (d) Four times

73 The ratio between the weight of an object at the base of a mountain to its weight at its top is ..... one.

(a) greater than (b) Less than (c) equals to (d) double

74 An object of mass 5 kg, so its weight on Earth's surface equals ..... newton

(a) 5 N (b) 50 N (c) 40 N (d) 50 Kg

75 Tides are most active when the moon is shaped like .....

(a) Full moon (b) crescent (c) First quarter (d) Last quarter

76 Earth's lines of gravitational forces are represented by..... lines

(a) Magnetic field (b) Electric field (c) Gravitational field (d) The length

77 ..... is used in purifying the blood from toxin

(a) Hoffmann voltammeter (b) Electroscope (c) Dialysis (d) Coulomb meter

78 ..... plant open its leaves during the day and closes them at night.

(a) Gazania (b) Mimosa (c) Sunflower (d) Cotton

79 The building unit of a living organisms is .....

(a) Matter (b) Cell (c) Atom (d) Tissue

80 A group of different tissues can form a (an) .....

(a) Organ (b) System (c) Organism (d) Tissue

81 A group of organs form .....

(a) Organ (b) System (c) Tissue (d) Organism

82 All the following organisms are consumers except.....

(a) Human (b) Birds (c) Fish (d) Plants

83 All the following organisms are producers except.....

(a) Beans (b) Cat (c) Green algae (d) Wheat

84 ..... are multicellular organisms.

(a) Bacteria (b) Paramecium (c) Amoeba (d) Mushroom fungus

85 Unicellular organisms include all of the following organisms except .....

(a) Bactria (b) Paramecium (c) Amoeba (d) Mushroom fungus

86 Euglena is a ..... organism

(a) Protozoa (b) Prokaryotes (c) Unicellular (d) Multicellular

87 Insects breathe by.....
(a) Lungs (b) Skin (c) Skin and lungs (d) Tracheal tubes

88 Dogs breathe by.....
(a) Lungs (b) Skin (c) Skin and lungs (d) Tracheal tubes

89 Mushroom fungus is a ..... organism
(a) Protozoa (b) Prokaryotes (c) Unicellular (d) Multicellular

90 All the following are found in the cell of bird's body except .....
(a) Cell wall (b) Nucleus (c) Golgi apparatus (d) Centrosome

91 Amoeba moves by.....
(a) Cilia (b) Flagellum (c) Pseudopodia (d) Fins

92 Paramecium moves by.....
(a) Cilia (b) Flagellum (c) pseudopodia (d) Fins

93 All the following are found in the cells of the bean plant except .....
(a) Cell wall (b) Nucleus (c) Golgi apparatus (d) Centrosome

94 All the following is found in bacterial cells except .....
(a) Cell wall (b) Cytoplasm (c) Golgi apparatus (d) Plasma membrane

95 Chloroplast contains ..... which absorbs light energy from the sun.
(a) Chlorophyll (b) Nucleus (c) Bacteria (d) Mitochondria

96 The adult frog breathes by .....
(a) Lungs (b) Skin (c) Skin and lungs (d) Tracheal tubes

97 Plants get oxygen from air by .....
(a) Plastids (b) Stomata (c) Mitochondria (d) Nucleus

98 The process of food breakdown and energy release occurs in .....
(a) Plastids (b) Stomata (c) Mitochondria (d) Nucleus

99 Leaves of ..... plant are drooping and dangling when you touch it.
(a) Gazania (b) Mimosa (c) Sunflower (d) Cotton

100 Sweat glands excrete ..... through the skin.
(a) Urine (b) Carbon dioxide (c) Wastes (d) Water

101 ..... is considered the closest celestial body to Earth.

(a) Venus (b) Mars (c) moon (d) sun

102 The moon is in second quarter after it is full ..... revolution around the Earth

(a) 1/4 (b) 1/2 (c) ¾ (d) 1

Question 02 put (true) or (false)

1. The chemical symbol of sodium element is S. ✗
2. Methane is considered from inorganic compounds ✗
3. The electronic configuration for an element that contains 15 neutrons and 14 protons has three energy levels. ✓
4. Ionic bond occurs between non-metals and non-metals. ✗
5. Electrons are found inside the nucleus. ✗
6. The outermost level in the nitrogen ion ($_7N$) contains 5 electrons ✗
7. The covalent bond occurs between two metals. ✗
8. Table salt solution can be separated by filtration. ✗
9. The atom is the building unit of the matter. ✓
10. Helium gas is used in filling car tires. ✗
11. Density and melting points from the chemical properties of the matter ✗
12. The outermost energy level of magnesium contains 2 electrons ✓
13. The bond between the elements of the sixth group and the elements of the seventh group is ionic. ✗
14. The energy level K is the largest level in energy. ✗
15. There are four main energy levels around the nucleus ✗
16. The third energy level is saturated with 18 electrons ✓
17. Oxygen is considered from mixtures. ✗
18. The charge and magnitude of protons is larger than electrons. ✗
19. The bond in the sodium molecule is double covalent. ✗
20. The bond between carbon and oxygen in the methane molecule is a single covalent bond. ✗

21. The atomic weight is larger than atomic number for all elements. ✗
22. The closest inert gas to the sodium atom ($_{11}Na$) is helium. ✗
23. Heterogeneous mixtures can't be separated by physical means. ✗
24. The bond in the potassium chloride molecule is covalent. ✗
25. From organic compounds is NaHCO3. ✗
26. Jupiter is similar to Mercury and Uranus in the composition of its atmosphere. ✓
27. The length of the shadow can be relied upon to determine the time. ✓
28. The Earth rotates on its axis every 365.5 days. ✗
29. The Earth rotates around its horizontal axis every 24 hours ✗
30. The four planets closest to the sun have thick crusts except for Venus. ✗
31. The length of the shadow formed at sunset is the greatest possible. ✓
32. Crop planting seasons vary according to the seasons of the year. ✓
33. The apparent height of the sun is lowest in winter ✓
34. The successive of seasons leads to a change in temperature ✓
35. Spring begins after the winter solstice ✓

Question 03 complete the following questions

1. The bond in the hydrogen molecule is single covalent bond, while the bond in the nitrogen molecule is triple covalent bond.
2. Isotopes are different forms for one element having the same atomic number and different in mass number.
3. An element its nucleus contains 27 nucleons and number of neutrons is 14 so number of electrons is 13.
4. The molecules of materials are different in type and number of atoms and the way they are linked together
5. The bond in the hydrogen chloride molecule is single covalent bond, while the bond in the sodium chloride molecule is ionic bond.
6. The scientific basis in which Moseley's periodic table is made was arranging elements according to their atomic numbers.
7. The number of electrons necessary to saturate the first four energy levels can be determined by the mathematical relation $2n^2$.

8. The difference in the bonding of atoms with each other leads to the difference in the physical and chemical properties of the molecules of the compound resulting.
9. The melting point of ionic compound is high, while the melting point of covalent compound is low.
10. The number of main energy levels is seven.
11. Types of chemical bonding are ionic bonding and covalent bonding.
12. The elements of the same groups have the same valency and properties.
13. When Aluminum atoms ($_{13}Al$) is converted into a positive ion the number of electrons in its ion is 8 electrons.
14. The scientific basis in which Mendeleev's periodic table is made was arranging elements according to their atomic masses.
15. An atom becomes a positive ion when losing electron.
16. The second energy level is L.
17. The scientist Moseley discovered that the properties of the elements are related to its atomic numbers not to atomic masses as Mendeleev believes.
18. The number of elements in the first period is 2 while the number of elements in in the fouth period is 18.
19. An atom changes into negative ion when it gains one or more electron.
20. An element its atomic number is 8 so its electronic configuration 2 , 6 .
21. The closest inert gas to sodium is Neon, while the closest inert gas to chlorine is Argon
22. Fertilizers are chemical compounds used in improving agricultural production.
23. The boiling point of bromine is more than the boiling point of chlorine.
24. The ionic bond arises due to the electrostatic attraction between positive ion and negative ion.
25. The block-p starts with group 3A and ends with group (0)
26. Transition elements start to appear from period number four and their block consists of ten groups.
27. NPK fertilizer consists of phosphorus which is necessary for strengthen the roots.
28. The chlorine atom is bonded to the sodium atom by the ionic bond.
29. The outermost energy level for any atom doesn't contain more than 8 electrons
30. The elements of d block are located in the middle of the periodic table and it contains 10 Group(s).
31. The number of energy levels in sodium atom is more than the number of energy levels in its ion

32 The chemical symbol for silver element is Ag.

33 The elements of halogens and Nobel gases are located in block P.

34 The number of energy levels in the chlorine atom equal to the number of energy levels in its ion.

35 The chemical symbol of potassium is P.

36 The Nobel gases are located in p block and it contains one group(s).

37 The covalent bonding arises from two atoms of the same non-metallic element or between two non-metallic atoms of two different elements

38 The electrons revolve around nucleus with a very high speed.

39 The modern periodic table consists of 7 Periods and 18 groups.

40 The chemical activity of alkali metals increases as we move from up to down while the chemical activity of halogens decreases as we move from up to down.

41 The second period starts with elements of group 1A and ends with elements of group (0).

42 Helium is used to fill ballons while nitrogen gas is used to fill car tires.

43 All elements of s block are metals except Hydrogen that is considered a non-metal gas.

44 The atomic radius is measured by a unit called picometer.

45 Each period ends with the elements of group (0) and this group is preceded by group 7A.

46 The number of atoms in a single molecule in some polar compounds may reach several thousand, as in hemoglobin and Vitamin-D.

47 The atomic radius is inversely propotional with the atomic number of the element in the same period.

48 Water can be separated into its components using a device called Hofmann's voltameter

49 Mixtures are classified into homogenous and heterogeneous mixtures.

50 The modern periodic table consists of 4 blocks.

51 Water is decomposed by electrolysis into two elements Oxygen gas and hydrogen gas.

52 Molecules of element consists of atoms of the same type, while molecules of compounds consists of atoms for different elements

53 Heterogeneous mixtures cannot be distinguished by the naked eye.

54 Silicon and germanium are considered as metalloids.

55 Red mercury oxide can be decomposed into Mercury and Oxygen gas by heating.

56 All matters are composed of small, similar units called Atoms.

57 Elements are substances that cannot be separated into their components by chemical or physical methods.

58 Iron and cork can be distinguished by the difference in density.

59 Methane is from organic compound molecules, while nitric acid is inorganic compound molecule.

60 From the rubbing electrostatic materials are silk, wool and cotton.

61 When rubbing ebonite rod with a piece of wool and the ebonite rod acquires negative electric charge, While the piece of wool acquires positive electrical charge.

62 The electrostatic series is the arrangement of some materials according to their easiness of losing electrons.

63 From the forms of industrial magnets are bar magnet, magnetic needle and magnetic ring

64 Different electrical charges attract, while similar electrical charges repel.

65 The electroscope is used to detect the presence of a charge on a body and determine its type.

66 A magnet has two poles which are north pole and south pole

67 The electrical charges accumulated on the surfaces of objects are known as static electricity.

68 Electric force lines are imaginary lines that do not intersect with each other.

69 The force of attraction of a magnet is greatest at two poles and decreases when approaching to middle.

70 Weak electrical charges are measured by coulomb meter.

71 Objects that can be charged with a static electric charge can be made of non-conductive materials such as ebonite and wood.

72 The compass is a freely moving needle magnet fixed at its pivot

73 The compass box is made of copper or plastic

74 During metal plating by electrostatic plating, the required painted object is charged with negative electric charge while the spray paint is charged with a positive electric charge.

75 When a magnet is suspended freely, it takes the direction of north pole of earth and south pole of earth

76 Magnetic field lines start from the north pole and end at the south pole outside the magnet

77 Lightning rod is a system used to protect buildings and constructions from lightning strikes.

78 The electric force lines end at the surface of charged metal objects and do not penetrate them.

79 Electric power lines start from the positive charge and end at the negative charge.

80 The North magnetic pole is represented by the symbol N, while the South magnetic pole is represented by the symbol S

81 The electroscope device is known as electrical detector.

82 The greater the mass of the two objects, the higher the force of attraction between them.

83 Similar magnetic poles repel each other, while different poles attract each other

84 The greater the distance between the two objects. The lower the gravitational force between them.

85 Black holes are formed when a massive star collapse at the end of its life

86 When a magnet is divided into several parts, each part becomes a new magnet with two poles

87 The phenomenon of tides can be used in generating electricity as one of the renewable energy sources

88 Orbital motion is the revolution of any object in space along a curved path around central object.

89 The force affecting the falling of an apple to the ground is the gravity force.

90 The phenomenon of tides is used to purify the water bodies from impurities.

91 The rotation of electrons around the nucleus of an atom is an example of orbital motion.

92 Contact force are those that act on objects upon contact, such as collision force, friction force and Elasticity force

93 Spring balance is used to measure the weight of objects

94 Earth's gravitational force is expressed by lines of Earth's gravitational lines

If the mass of an object is (500 g), then its weight is 5 newton.

95 Knowing that the gravitational field strength on the Earth's surface is (10N/Kg)

96 Weight = Mass X Gravitational field intensity

97 The measuring unit of weight is newton, while the measuring unit of mass is kilogram.

98 Veins transport carbon dioxide and wastes from body cells to heart.

99 The building unit of a living organism is cell.

100 Guard cells controls the opening and closing of the stomata.

101 The crust of the Earth planet is thicker than the crust of the Venus planet

102 The duration of day and night is nearly equal in seasons of spring and autumn.

Question 04 write the scientific term for each of the following

1	A type of fertilizers contains nitrogen, phosphorus and potassium.	NPK Fertilizers
2	Number of proton found inside the nucleus of the atom.	Atomic number
3	Different forms from elements having the same atomic number and different atomic masses.	Isotopes
4	A semi-metal used in the manufacture of electronic chips.	Silicon
5	It is everything that has a mass and occupies a space	Matter
6	A metal atom that has lost one electron or more.	Positive ion (Cation)
7	A non-metallic atom has gained one electron or more.	Negative ion (Anion)
8	The building unit of the matters.	Atom
9	The properties that only appear when a chemical reaction occurs that leads to a change in the shape and composition of the substance.	Chemical Properties
10	The difference between atomic mass and atomic number.	Neutrons Number
11	A pure substance formed as a result of the chemical union of two or more elements in a fixed mass ratio, and its components can be separated by various methods	Compounds
12	The scientist who made the first scientific theory about the atom.	Dalton
13	An alloy that maintains its strength at high temperatures and is used in the manufacture of military aircraft structures.	Aluminum-Titanium alloy
14	Chemical compounds used in improving the agricultural productivity.	Fertilizers
15	The simplest pure form of matter where components cannot be separated by physical or chemical methods.	Elements
16	Particles that include protons, neutrons and electrons.	Subatomic particles
17	The space that contains protons and neutrons.	Nucleus

18	Properties that can be observed and some of them can be measured.	Physical Properties
19	An element necessary for greening of plant leaves	Nitrogen
20	Particles whose mass can be neglected while its charge can't.	Electrons
21	Paths in which electrons revolve around the nucleus.	Energy levels
22	The summation of numbers of both protons and neutrons	Mass number
23	Mixtures whose components can be distinguished with the naked eye.	Heterogeneous Mixtures
24	Positively charged particles located inside the nucleus.	Protons
25	A bond that results from electrical attraction between a positive ion and a negative ion.	Ionic bond
26	A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule.	Molecular formula
27	Particles whose charge can be neglected while its mass can't	Neutrons
28	Materials composed of two or more substances that are not chemically combined.	Mixtures
29	An element necessary for strengthening roots	Phosphorus
30	An element necessary for healthy plant growth.	Potassium
31	A bond that results from sharing each atom with one electron.	Single Covalent bond
32	Compounds that dissolve in water and conduct electricity.	Ionic compounds
33	A bond that results from sharing each atom with three electrons	Triple Covalent bond
34	The simplest molecule of an organic compound in which a carbon atom is bonded to four hydrogen atoms	Methane molecule
35	Compound that conduct electricity but are poor electrical conductors.	Covalent compounds
36	A bond that results from sharing each atom with two electrons.	Double Covalent bond
37	A bond that forms between two atoms of different non-metallic elements or between two similar atoms of a non-metallic element.	Covalent bond
38	System used to protect buildings and constructions from lightning strikes.	Lightning rod
39	Device used to determine the type of electric charge.	Electroscope
40	A natural stone that has the ability to attract objects made of iron.	Natural magnet (Lodestone)

41	Similar poles repel and different poles attract.	Law of Attraction and Repulsion
42	Materials that are not attracted to the magnet	Nonmagnetic materials
43	Electrical charges accumulated on the surfaces of objects when electrons are lost or gained.	Static electricity
44	Materials that are attracted to the magnet	Magnetic materials
45	Imaginary lines representing the strength of the magnetic field.	Magnetic Field Lines
46	Arrangement of some materials according to how easily they lose electrons.	Electrostatic series
47	The area surrounding electric charges where their effect is appeared without contact.	Electric field
48	An ancient tool used to determine the four geographical directions.	Compass
49	The device used to measure weak electric charges.	Coulomb meters
50	Imaginary lines showing the path taken by a small, freely moving positive charge placed in it.	Electric field lines
51	The area surrounding the magnet where the effects of its magnetic force appear.	Magnetic Field
52	Specialized cells in opening and closing stomata in plants	Guard cells
53	Plants that open their leaves during the day and close them at night.	Gazania
54	The building units of a living organism.	Cells
55	A group of similar cells that work together and perform one function.	Tissue
56	The process by which a living organism obtains the materials used to build its body and energy	Nutrition
57	The substance that the plant makes to obtain energy.	Glucose
58	A group of different tissues that work together and perform one function.	Organ
59	Organisms that breathe through skin and lungs	Amphibians
60	The organ that gets rid of excess water, salts and urea in the form of urine.	Kidneys
61	A group of different organs that work together.	System
62	The process by which a plant converts light energy into chemical energy in the presence of water and carbon dioxide gas.	Photosynthesis

63	A process by which a living organism gets rid of harmful waste and excess materials the body does not need.	Excretion
64	The arrangement of living organisms into groups according to their similarities and differences to ease their study and identification.	Classification
65	Undifferentiated cells have the ability to transform into all differentiated cells of the body.	Stem Cells
66	Simple organisms whose body consists of a single, unspecialized cell.	Unicellular organisms
67	Complex organisms consisting of many cells that are distinguished and specialized in their work	Multicellular organisms
68	Plants that move with the movement of the sun.	Sunflower
69	The planet that has a thin crust full of craters	Mercury
70	The season in which the number of daylight hours is greater than any other season of the year.	Summer
71	The planet is mainly composed of oxygen and nitrogen gases.	Earth
72	The season in which the number of night hours is greater than the number of day hours	Night

Question 05 — What is meant by:

1	Matter	Anything that has a mass and volume (occupies a space).
2	Metals	They are elements whose outer most energy levels contains 1,2 or 3 electrons.
3	Pure substances	They are substances whose components can't be separated by physical methods.
4	Non-metals	They are elements whose outer most energy levels contains 5,6 or 7 electrons.
5	Atom	The smallest building unit of any matter.
6	Chemical properties	They are properties of substances that only appear when a chemical reaction occurs, resulting in a change in both the shape and composition of the substance.
7	Valency	The number of unpaired electrons found in the last energy level in Lewis structure.
8	Physical properties	They are properties of the substances that can be observed and measured in some cases.

9	Atomic number	It is the number of protons inside the nucleus of the atom.
10	Atomic mass	The sum of the number of the protons and the neutrons inside the nucleus of the atom
11	Mendeleev's Periodic table	It is the first real periodic table for classifying elements, in which the scientist Mendeleev arranged elements in an ascending order according to their atomic masses.
12	Picometer	It is the unit of measuring atomic radius.
13	Melting point	It is the temperature at which matter changes from solid state to a liquid state.
14	Modern periodic table	It is the periodic table that made by a group of scientists, in which elements were arranged in an ascending order according to their atomic numbers and the way of filling energy sublevels with electrons.
15	Isotopes	They are different forms of the same element that have the same atomic number but differ in mass number.
16	Element	It is the simplest pure form of matter that can't be broken down into simpler form.
17	Fertilizers	They are chemical compounds that are used to improve the agricultural production.
18	Boiling point	It is the temperature at which matter changes from liquid state to a gaseous state.
19	Moseley's Periodic table	It is the periodic table that made by scientist Moseley, in which elements were arranged in an ascending order according to their atomic numbers.
20	Compound	It is a pure substance that formed from the chemical combination of two or more elements in fixed mass ratios.
21	Positive ion	A metal atom that lost one or more electrons in the chemical reaction.
22	Mixture	They are substances that composed of two or more substances that are not chemically combined, allowing them to be separated by physical methods.
23	Negative ion	A nonmetal atom has gained one or more electrons in the chemical reaction.
24	Homogeneous mixture Solution	It is a mixture in which its components can't be distinguished by the naked eye

25	Ionic bond	It is the electrostatic attraction between a positive ion (cation) and a negative ion (anion) forming an ionic compound molecule.
26	Heterogeneous mixture	It is a mixture in which its components can be distinguished by the naked eye.
27	Covalent bond	It is the bond that occurs between two atoms of the same non-metal elements or between two atoms of different nonmetal elements by sharing electrons.
28	Molecular formula	It is a symbolic formula that expresses the type and the number of atoms that form the molecule.
29	Single covalent bond	It is the bond that occurs between two atoms of the same nonmetal element or between two atoms of different nonmetal elements by sharing its valence electron.
30	Dalton	The scientist Dalton made the first scientific theory about the atom.
31	Magnetic materials	These are materials that attracted to magnet example steel – iron
32	Static electricity	The charges that accumulate on the surface of objects when they lose or gain electrons.
33	Non-magnetic materials	These are materials that are not attracted to magnets example Gold – Copper
34	Magnetic field	The region of space around a magnet where the effect of its magnetic force appears in it.
35	Electrostatic series	The arrangement of materials according to the ease of losing electrons when rubbed together.
36	Law of attraction and repulsion	Like (similar) magnetic poles repel each other – unlike (different) magnetic poles attract each other.
37	Electric field	It is the region of space around an electric charge in which its effect appears.
38	Electric field lines	They are imaginary lines that show the path taken by a small free-moving positive charge that are placed in the electric field.

39	Magnetic field lines	They are imaginary lines that represent the force of the magnetic field
40	Field forces	It is the force that acts on objects over a certain distance without touching.
41	Object's mass	It is the amount of matter an object contains.
42	Earth's gravitational forces	It is the force that pulls (attracts) all objects downward towards Earth's center.
43	Object's weight	It is the gravitational force that earth exerts on the object.
44	Contact forces	It is the force that acts on certain objects when they touch each other.
45	Prokaryotes	They are unicellular organisms that don't contain true nucleus.
46	Eukaryotes	They are unicellular organisms or multicellular organisms that contain true nucleus.
47	Classification	It is the arrangement of living organisms into groups according to the similarities and differences between them.
48	Autotrophs organisms	They are organisms that can make their own food through photosynthesis.
49	Heterotrophs organisms	They are organisms that depend directly or indirectly on other producers to obtain their food.
50	Cellular respiration	It is a vital process of breaking down organic nutrients, especially glucose, in the presence of oxygen to release energy
51	Cell	It is the basic building unit of structure and function in all living organisms.
52	Tissue	It is a group of cells.
53	Organ	It is a group of tissues.
54	Unicellular organisms:	They are living organisms whose bodies consist of a single cell.
55	Multicellular organisms	They are living organisms whose bodies consist of more than one cell.
56	Movement	It is the process that enables the living organisms to move from one place to another.
57	moon	It is a dark celestial body that orbits the Earth and it appears illuminated at the night sky

58 **Umbra (shadow area)** — It is a dark area that doesn't receive any light rays as result of presence Earth in the path of sunlight.

59 **Lunar eclipse** — A natural phenomenon that occurs when Earth is located between sun and moon so it block sunlight partially or completely.

60 **Transparent objects** — They are objects that allow light to pass through them.

61 **Opaque objects** — They are objects that don't allow light to pass through them.

62 **Partial eclipse** — A natural phenomenon that occurs when a part of moon is in the Earth's shadow and the other part is in the Earth's penumbra.

63 **Total eclipse** — A natural phenomenon that occurs when the moon is completely within the Earth's shadow.

Question 06 — give reason for each of the following

1. The energy level (L) is saturated with 8 electrons.

   Number of electrons in the energy level (L) = $2n^2 = 2 \times (2)^2 = 8$ electrons

2. Calcium ($_{20}Ca$) is an element from alkaline earth metals.

   (2 , 8 , 8 , ②) the last energy level contains 2 electrons group 2A (alkaline earth metals group).

3. Iron filings can be easily separated from flour.

   Because they don't combine chemically together so we can separate them easily by magnetic separation.

4. The nucleus of the atom is positively charged.

   Because the nucleus contains positively charged protons and neutrally charged neutrons.

5. The level (M) is saturated first with electrons before the level (N).

   Because the energy level (M) has energy lower than that of the energy level (N).

6. The mass of the atom is concentrated in its nucleus

   Because electrons have negligible mass compared to the mass of protons and neutrons inside the nucleus.

7. The nitric acid molecule is considered an inorganic compound molecule.

   Because nitric acid molecule (HNO_3) doesn't contain carbon or hydrogen atoms.

8. Fluorine (9F) is an element from halogens.

(2 , ⑦) the last energy level contains 7 electrons (group 7A) halogens

9. The difference in energy of energy levels in which electrons are revolved.

Because the energy of the energy level increases as we move away from the nucleus.

10. Nitrogen is used to fill car tires instead of air.

Because Nitrogen is not affected by temperature and doesn't react with rubber.

11. The bond in the sodium chloride molecule is ionic.

Because an electrostatic attraction occurs between positive ion of sodium and negative ion of chlorine forming an ionic compound called sodium chloride (NaCl).

12. A bond can form between two chlorine atoms, but a bond cannot form between two sodium atoms.

Because each chlorine atom shares its valence electron to form one single covalent bond and produce covalent compound, while sodium atom is a metal lose its outermost electrons during the chemical reactions.

13. Ionic compounds are neutral in charge.

Because the number of positive charges is equal to the number of negative charges in the ionic compound.

14. The atom is electrically neutral.

Because the number of positive protons inside its nucleus is equal to the number of the negative electrons that revolve around the nucleus.

15. The element isotopes have the same atomic number and different atomic masses.

Because the element isotopes have the same number of protons but they are different in the number of neutrons.

16. The symbol of sodium is Na not S as it is expected.

Because the symbol of sodium (Na) is derived from its Latin name (Natrium).

17. Scientists had made many attempts for classifying elements.

To facilitate their study and to find a relationship between the elements and their chemical and physical properties.

18 Helium gas is used to fill balloons.

Because helium gas is lighter than air and it is not flammable.

19 It is advised to reduce the use of lots of fertilizers.

Because the overuse of chemical fertilizers may harm humans, animals and plants because it causes water and soil pollution

20 Moseley rearranges elements in his table according to their atomic numbers.

Because Moseley discovered that properties of elements are related to their atomic numbers, not to their atomic masses, as Mendeleev believes.

21 Atomic mass is often greater than the atomic number.

Because the mass number equal the sum of protons and neutrons inside the atom, but the atomic number equal the number of protons only.

22 Stainless steel alloy is used in the manufacture of cookware.

Because Stainless steel alloy resists rusting.

23 Calcium ($_{20}$Ca) is a metal.

(2 , 8 , 8 , ②) it has less than 4 electrons in its last energy level.

24 Atomic mass equals atomic number in hydrogen atom.

Because the nucleus of hydrogen atom has no nucleus.

25 The bond in a hydrogen chloride molecule is single covalent.

Because hydrogen atom shares its valence electron and chlorine atom shares its valence electron to form one single covalent bond.

26 Aircraft structures are made of aluminum and titanium alloy.

Because Aluminum Titanium alloy is lighter than aluminum and retains strength of high temperature.

27 Chlorine ($_{17}$Cl) is a non-metal.

(2 , 8 , ⑦) it has more than 4 electrons in its last energy level.

28 Atomic mass is double atomic number in $^{16}_{8}O$ atom.

Because the number of protons equals the number of neutrons in oxygen atom.

29 Sodium (11Na) is an element from alkali metals.

(2 , 8 , ①) the last energy level contains 1 electron group 1A alkali metals

30 It is difficult to identify metalloids from their outermost energy level.
Because the number of electrons in their outermost energy levels is different.

31 The bond in the water molecule is a single covalent
Because oxygen atom shares its two unpaired valence electrons, while each hydrogen atom shares its valence electron to form single covalent bond between each hydrogen and oxygen atom.

32 The valency of Nobel gases is zero.
Because they have completed outermost energy level

33 The bond in the oxygen molecule is double covalent bond
Because each oxygen atom shares its two unpaired valence electrons to form double covalent bond.

34 Aerogel is used in making jackets for research scientists in Antarctica.
Because Aerogel has excellent insulating properties so it is used instead of using polar bear fur, helping to protect them from extinction.

35 The bond in the nitrogen molecule is triple covalent
Because each nitrogen atom shares its three unpaired valence electrons to form triple covalent bond

36 The hydrogen molecule is considered an element molecule, while the sodium chloride molecule is a compound molecule.
Because hydrogen molecule (H_2) is composed of same atoms while sodium chloride molecule ($NaCl$) is composed of different atoms

37 When a metal loses an electron, it turns into a positive ion.
Because number of positive protons becomes greater than number of negative electrons in its ion.

38 Seawater is considered a homogeneous mixture.
Because the components of seawater can't be distinguished by the naked eye.

39 Vitamin D is considered one of the important vitamins for the human body.
Because Vitamin D regulates calcium and phosphorus levels in the blood to prevent osteoporosis.

40 Wood floats on the surface of the water while iron sinks in it.
Because the density of wood is lower than water
Because the density of iron is higher than water

41 When a halogen gains an electron, it turns into a negative ion.

Because halogen the number of negative electrons becomes greater than number of positive electrons in the ion of halogen.

42 The electrostatic electricity is called static electricity.

Because the electric charges accumulate on the surface of rubbed part only and don't transfer to the rest of it.

43 It is preferable to paint metals using electrostatic painting method than other methods.

To reduce the paint waste and to ensure even layer of paint.

44 Small paper scrapes are attracted to the ebonite rod when rubbed with silk.

Because rubbing ebonite rod with silk gives it the ability to attract lightweight objects such as paper scraps.

47 Lightning rods are used in buildings and constructions.

To protect buildings and structures from lightening.

48 Small paper scraps are not attracted to the copper rod when rubbed with wool.

Because rubbing non insulated copper rod with silk doesn't give it the ability to attract lightweight objects such as paper scraps.

49 All objects fall downward to the Earth's center.

Due to the force that pulls (attracts) all objects downward towards Earth's center.

50 Metal chains are hanged from fuel transport vehicles and touch the ground.

To discharge the electric charges generated by the friction of the fuel with the surface of the fuel tank to prevent fuel combustion.

51 The object has no weight in the outer space.

Due the absence of gravitational force in the outer space.

52 The glass rod becomes positively charged when rubbed with silk.

Because glass precedes silk in the electrostatic series.

53 Nickel and Cobalt are considered as magnetic materials

Because Nickel and Cobalt attract to the magnet

54 The weight of an object on the Earth's surface is greater than the weight of the same object on the Moon's surface.

Because the gravitational field of the moon is $\frac{1}{6}$ the Earth's gravitational field.

55 Aluminum and silver are non-magnetic materials

Because Aluminum and Silver don't attract to the magnet

56 Object's weight changes from one planet to another.

Because the weight changes due to the difference in the gravitational field from one place to another.

57 Compass box is made of copper or plastic and not of iron

To prevent the attraction between magnetic needle and iron which can effect on its movement.

58 The gravitational force between two objects increases when their masses increase

Because the mutual Gravitational Attraction Force between two objects is directly proportional to the masses of the two objects.

59 Iron fillings are attracted in large amounts at each pole of the magnet

Because attraction force (magnetic force) of magnet is the strongest at its poles and it decreases as it gets closer to the middle of the magnet.

60 Green algae are considered as producer organisms.

Because green algae can make their own food through photosynthesis

61 Bacteria differ from euglena, although they are both unicellular organisms.

Because bacteria is prokaryotes while euglena is from eukaryotes.

62 Living organisms are classified according to similarities and differences.

To facilitate their study.

63 The food path in the digestive system is considered as a closed path.

Because all organs of digestive system are connected together.

64 Rabbits are considered as consumer organisms.

Because rabbits depend directly on producers to obtain their food.

65 The lion is considered as a multicellular organism.

Because their bodies consist of more than one cell.

66 Bacteria are considered as unicellular living organisms.

Because their bodies consist of a single cell.

67 Prokaryotes can't be stem cells

Because stem cells are special type of cell in higher animals and humans.

68 Paramecium and Euglena are considered as unicellular organisms.

Because their bodies consist of a single cell.

69 The planets of the solar system do not collide with each other while orbiting the sun

Because they orbits the sun in oval (elliptical) paths at different distances from the sun.

70 The moon appears bright even though it is an opaque body

Because moon reflects sunlight falling on it.

71 The atmosphere of Uranus appears blue-green in color.

Because its atmosphere is composed of hydrogen, helium and methane.

72 Occurrence of partial lunar eclipse.

Because entire moon is located within the shadow of the Earth (umbra).

73 The surface of Mercury is full of craters.

Because they are caused by meteors impacts.

Question 06 What happens if ..... ?

1 Bonding of two hydrogen atoms with an oxygen atom.

A covalent compound called water (H_2O) is formed by two single covalent bonds.

2 To the acidified water if it is subjected to electrolysis.

Water will decompose into its components, which are hydrogen gas and oxygen gas.

3. Bonding of two nitrogen atoms
A covalent element called nitrogen molecule (N_2) is formed by triple covalent bond.

4. Bonding of two chlorine atoms.
A covalent element called chlorine molecule (Cl_2) is formed by single covalent bond.

5. If the atomic radius Increase (according to boiling and melting points of halogens).
The melting and boiling points will increase.

6. If we use carbon dioxide gas to fill balloons
The balloons won't rise in the air.

7. If the atomic radius Increase (according to boiling and melting points of alkali metals
The melting and boiling points will decrease.

8. If we manufacture iron cookware.
The cookware may rust.

9. If the number of electrons in the last energy level is complete with electrons for the type of element.
The type of element will be a noble (inert) gas.

10. Bonding of a chlorine atom with a hydrogen atom.
A covalent compound called hydrogen chloride (HCl) is formed by single covalent bond.

11. If the number of electrons in the last energy level is greater than 4 electrons for the type of element.
The type of element will be a non-metal.

12. If we put a piece of wood in the water.
The wood piece will float on the water.

13. If the number of electrons in the last energy level is less than 4 electrons for the type of element.
The type of element will be a metal.

14. Heating of red mercury oxide compound.
Red mercury oxide will decompose into its components, which are mercury (Hg) and oxygen gas (O_2).

15. To The atomic radius when increasing the atomic number of elements in one period from left to right.
The atomic radius of elements will decrease

16. Bonding of a chlorine atom with a sodium atom.

An ionic compound called sodium chloride (NaCl) is formed by ionic bond.

17. To The atomic radius when increasing the atomic number of elements of the same group from top to bottom.

The atomic radius of elements will increase

18. If we dip a sunflower leaf in a lemon juice.

Its color will turn into red.

19. Bonding of two oxygen atoms

A covalent element called oxygen molecule (O_2) is formed by double covalent bond.

20. Rub ebonite rod with a piece of silk and bring them close to each other

They will be attracted to each other because they have opposite charge.

21. Approaching a positively charged glass rod close to a negatively charged electroscope.

They will be attracted to each other because they have opposite charge.

22. Approaching a negatively charged ebonite rod close to an electroscope negatively charged.

The divergence of the two gold leaves increases.

23. Hang a rod of ebonite after rubbing it with silk and bring a rod of glass close to it after rubbing it with silk.

They will be attracted to each other because they have opposite charge.

24. Dip a magnet in a box containing iron filings.

Iron fillings are attracted to magnet (high density of filling at poles and decreases at the middle of magnet)

25. Hang a rod of ebonite after rubbing it with silk and bring a rod of glass close to it without rubbing.

The free moving ebonite rod will be attracted to the fixed glass rod.

26. Touching a charged flashlight disc with your hand.

We feel a slight electric shock because the electric charges are discharged.

27. When a magnet is brought close to a mixture of iron filings and silver turnings

Only iron fillings are attracted to the magnet

28 Transferring an object from the moon's surface to the Earth's surface relative to its weight.

The weight of the object increases.

29 When dividing a single magnet into several parts

Each part of them forms a new magnet with two poles

30 The absence of gravity.

The objects become weightless so they will float of in the outer space.

31 Bringing the south pole of a magnet closer to the north pole of another freely suspended magnet

The freely suspended magnet move toward (attract) to the other magnet.

32 Increase in objects masses relative to gravitational force between them.

The mutual gravitational force between the two objects increases.

33 Transferring an object from the moon's surface to the Earth's surface relative to its mass.

The mass of the object doesn't change.

34 Bring the south pole of a magnet closer to the south pole of another freely suspended magnet.

The freely suspended magnet move away (repel) from the other magnet.

35 Decrease the distance between the two objects relative to the gravitational force between them.

The mutual gravitational force between the two objects increases.

36 The plant does not obtain carbon, hydrogen and oxygen elements.

The plant can't form carbohydrates in photosynthesis process.

37 The absence of nodular bacteria on the roots of the bean plant.

plant can't get obtain nitrogen in a usable form.

38 Do not add a spoonful of sugar to the saline solution used in making pickled olives.

The olives still have bitterness taste.

39 Eating food and water contaminated with Salmonella typhi bacteria.

The person will be infected with typhoid disease.

40 Leave the yogurt in a warm place for more than 5 hours

The bacteria will grow to complete the fermentation of the milk, causing the milk to coagulate.

41 Eating foods contaminated with Entamoeba histolytica bacteria.

The person will be infected with dysentery disease.

42 Do not keep yogurt in the refrigerator.

The activity of lactic acid bacteria will continue (won't stop).

43 The moon is entirely located in the Earth's shadow

Occurrence of total lunar eclipse

44 The Earth's rotation around the sun in a complete revolution.

Occurrence of the cycle of seasons.

47 Equals the number of hours of night and day.

Occurrence of spring and autumn.

48 Part of the moon is located in the penumbra of Earth.

Occurrence of partial lunar eclipse.

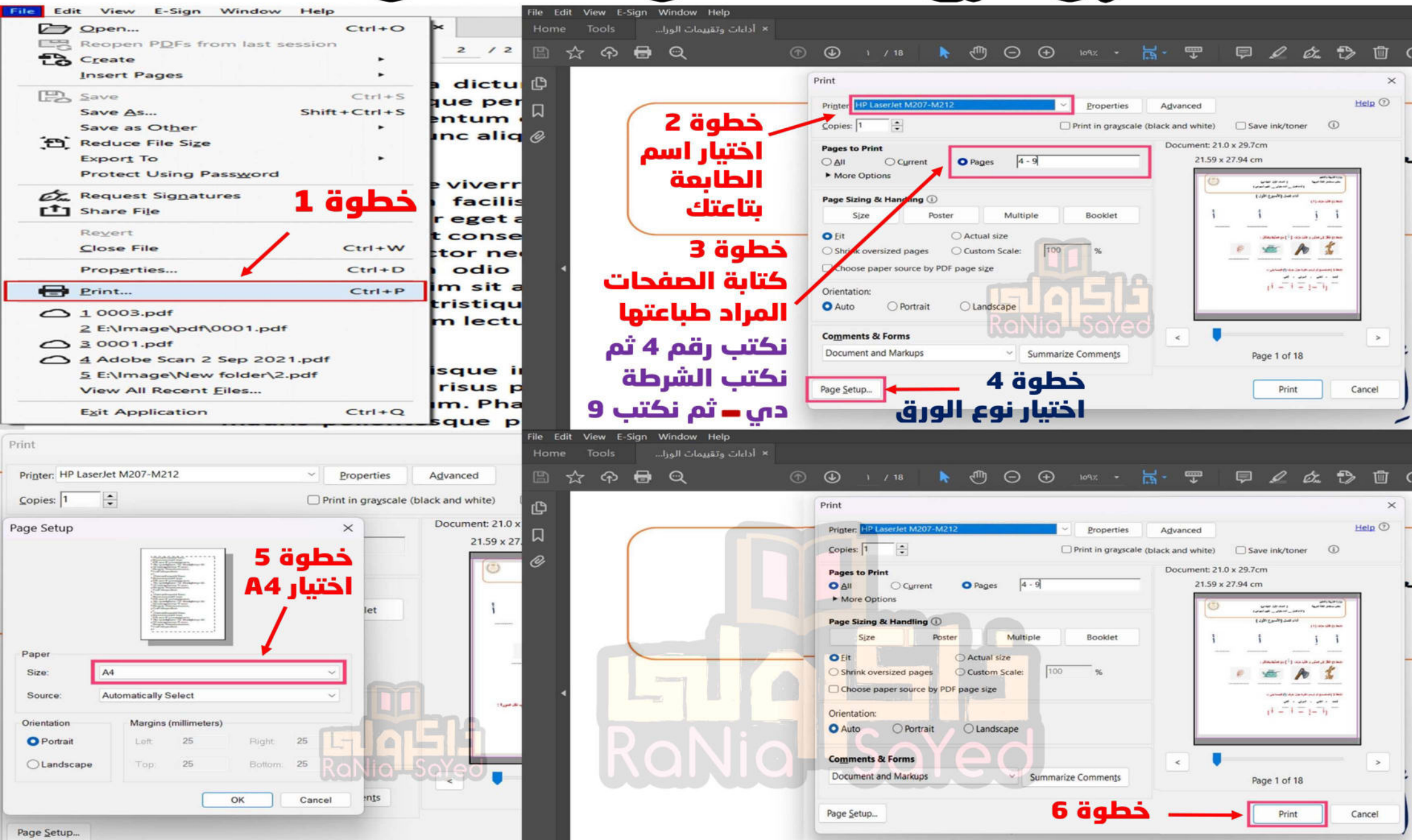
49 The Earth's rotation around its axis in a complete revolution.

Occurrence of the cycle of day and night.

انتهت الأسئلة مع أطيب الامنيات بالنجاح والتوفيق

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9



المراجعة رقم (2)

الترم الاول

Unit 1

Lesson 1 , 2 , 3

Q1. Choose the correct answer:

1 Sphinx statue consists of rocks made up of ..... .

a. sand stone b. limestone c. granite d. basalt

2 The model of ..... is the first model for the atom on an experimental base.

a. Dalton b. Mendeleev c. Moseley d. Rutherford

3 The atom consists of positively charged ..... .

a. electrons b. neutrons c. nucleus d. levels

4 Negatively charged particles that revolve around the nucleus are ..... .

a. protons b. electrons c. neutrons d. particles

5 The mass of subatomic components is measured in atomic mass units, and its symbol is ..... .

a. U b. Y c. W d. H

6 The chemical symbol of potassium is ..... .

a. B b. P c. K d. Po

7 The chemical symbol of lead element is ..... .

a. Bp b. Pb c. Le d. Bb

8 NPK fertilizer consists of ..... element that helps to make the plant leaves green.

a. K b. N c. P d. F

9 ..... element is necessary for strengthen roots of plants.

a. K b. N c. P d. F

10 The number of positive protons represents the ..... .

a. atomic number

b. mass number

c. number of energy levels

d. number of elements

11 Inside the nucleus of the atom, mostly the number of ..... is more than or equal the number of protons.

a. atomic number **b.** electrons **c.** neutrons **d.** particles

12 An element contains 20 nucleons and the number of negative charges is 9 so the number of neutral charges is ..... .

a. 12 **b.** 10 **c.** 11 **d.** 9

13 An atom of an element in which electrons revolves around it at three energy levels, and the outermost energy level contains 2 electrons, so its atomic number is ..... .

a. 2 **b.** 12 **c.** 14 **d.** 8

14 An element's outermost energy level (L) contains a number of electrons equal to the number of electrons in the level (K), so its atomic number is ..... .

a. 4 **b.** 6 **c.** 8 **d.** 12

15 An element's outermost in which energy level (M) contains one electron, so its atomic number is ..... .

a. 3 **b.** 9 **c.** 11 **d.** 19

16 Deuterium is considered one of the isotopes of ..... element.

a. oxygen **b.** nitrogen **c.** hydrogen **d.** carbon

17 ..... is considered one of homogeneous mixtures.

a. A mixture of iron filings and sawdust

b. Salt solution

c. A mixture of oil with water

d. A mixture of sand and water

18 From molecules that consists of the same type of atoms is ..... molecule.

a. HCl **b.** H_2O **c.** O_2 **d.** NH_3

19 ..... can be decomposed through electrolysis by using Hoffman's voltammeter.

a. Water **b.** Mercuric oxide **c.** Carbon **d.** Nitric acid

20 We can distinguish between ..... through thermal conductivity.

a. iron and copper
b. rubber and plastic
c. copper and rubber
d. silver and iron

21 Salt solution can be separated through ..... .

a. filtration process
b. magnetic attraction
c. evaporation and condensation
d. precipitation process

22 ..... is from polyatomic element molecules.

a. Carbon
b. Oxygen
c. Ozone
d. Iron

23 ..... is from substances that can be separated by chemical methods.

a. Red mercuric oxide
b. Table salt solution
c. A mixture Iron filings and sand
d. A mixture of oil and water

24 The molecular formula for a compound that consists of one nitrogen atom, one hydrogen atom, and three oxygen atoms is ..... .

a. HO_3N
b. HNO_3
c. O_3HN
d. NHO_3

25 The toothpaste is colored with ..... color on adding a litmus paper on it.

a. blue
b. red
c. violet
d. green

26 Balloons can be filled with ..... gas.

a. oxygen
b. nitrogen
c. chlorine
d. helium

27 ..... is considered from the compounds.

a. Ozone
b. Iron
c. Mercury
d. Egyptian indigo dye

28 The number of atoms in sulphuric acid molecule H_2SO_4 ..... .

a. 5
b. 8
c. 7
d. 6

29 The molecules of the following organic compounds consists of thousands of atoms except ..... .

a. hemoglobin
b. plastic polymer
c. methane
d. vitamin D

Q2. Put (✓) or (✗):

1. The atom is the building unit of the matter. ( )
2. Electrons are found inside the nucleus. ( )
3. There are four main energy levels around the nucleus. ( )
4. The charge and magnitude of protons are larger than electrons. ( )
5. The chemical symbol of sodium element is S. ( )
6. The atomic mass is larger than the atomic number for all elements. ( )
7. The third energy level is saturated with 18 electrons. ( )
8. The energy level K is the largest level in energy. ( )
9. The electronic configuration for an element that contains 15 neutrons and 14 protons has three energy levels. ( )
10. The outermost energy level of magnesium contains 2 electrons. ( )

Q3. Correct the underlined words:

1. Methane is considered one of inorganic compounds. (.....)
2. Oxygen is considered from mixtures. (.....)
3. Table salt solution can be separated by filtration. (.....)
4. Helium gas is used in filling car tires. (.....)
5. Density and melting points from the chemical properties of the matter. (.....)
6. Heterogeneous mixtures can't be separated by physical means. (.....)
7. From organic compounds is $NaHCO_3$ (.....)

Q4. Write the scientific term:

1 It is everything that has a mass and occupies a space. (.....)

2 The building unit of the matter. (.....)

3 Tiny particles can't be subdivided. (.....)

4 The scientist who made the first scientific theory about the atom. (.....)

5 The space that contains protons and neutrons. (.....)

6 Paths in which electrons revolve around the nucleus. (.....)

7 Particles that include protons, neutrons and electrons. (.....)

8 Positively charged particles located inside the nucleus. (.....)

9 Particles whose mass can be neglected while their charge can't. (.....)

10 Particles whose charge can be neglected while their mass can't. (.....)

11 Chemical compounds used in improving the agricultural productivity. (.....)

12 A type of fertilizer contains nitrogen, phosphorus and potassium. (.....)

13 An element necessary for greening of plant leaves. (.....)

14 An element necessary for strengthening roots. (.....)

15 An element necessary for healthy plant growth. (.....)

16 Number of protons found inside the nucleus of the atom. (.....)

17 The summation of numbers of both protons and neutrons. (.....)

18 The difference between atomic mass and atomic number. (.....)

19 Different forms of elements have the same atomic number and different atomic masses. (.....)

20 The simplest pure form of matter where its components cannot be separated by physical or chemical methods. (.....)

21 Materials composed of two or more substances that are not chemically combined. (.....)

22 Mixtures whose components can be distinguished with the naked eye. (.....)

23 A pure substance is formed as a result of the chemical combination of two or more elements in a fixed mass ratio, and its components can be separated by various methods. (.....)

24 A semi-metal used in the manufacture of electronic chips. (.....)

25 An alloy that maintains its strength at high temperatures and is used in the manufacture of military aircraft structures. (.....)

26 A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule. (.....)

27 Properties that can be observed and some of them can be measured. (.....)

28 The properties that only appear when a chemical reaction occurs that leads to a change in the shape and composition of the substance. (.....)

Q5. Complete the following sentences:

1 The electrons revolve around the ..... with a very high speed.

2 The chemical symbol of potassium is ..... .

3 The chemical symbol for the ..... element is Ag.

4 NPK fertilizer consists of ..... which is necessary to strengthen the roots.

5 ..... are chemical compounds used in improving agricultural production.

6 An element's atomic number is 8 so its electronic configuration is ..... .

7 The outermost energy level for any atom doesn't contain more than ..... electrons

8 The second energy level is ..... .

9 The number of main energy levels is ..... .

10 The number of electrons necessary to saturate the first four energy levels can be determined by the mathematical relation ..... .

11 An element's nucleus contains 27 nucleons and the number of neutrons is 14 so the number of electrons is .....

12 ..... are different forms for one element having the same atomic number and different in ..... number.

13 Each period ends with the elements of group ..... and this group is preceded by group ..... .

14 The second period starts with elements of group ..... and ends with elements of group ..... .

15 The modern periodic table consists of ..... periods and ..... groups.

16 The modern periodic table consists of ..... blocks.

17 Elements of block-s are located on the ..... of the periodic table and consist of ..... groups while elements of ..... are located at the bottom of the periodic table.

18 The Nobel gases are located in the ..... block and contain ..... group(s).

19 The elements of ..... block are located in the middle of the periodic table and it contains ..... Group(s).

20 The boiling point of bromine is ..... the boiling point of chlorine.

21 The elements of the same groups have the same ..... and ..... .

22 The scientific basis in which Mendeleev's periodic table is made was arranging elements according to their ..... .

23 The scientific basis in which Moseley's periodic table is made was arranging elements according to their ..... .

24 The scientific basis in which the modern periodic table is made was arranging elements according to their ..... .

25 The scientist Moseley discovered that the properties of the elements are related to their ..... not to ..... as Mendeleev believes.

26 The block-p starts with group ..... and ends with group ..... .

27 The elements of halogens and Nobel gases are located in block ..... .

28 All elements of ..... block are metals except ..... that is considered a non-metal gas.

29 The number of elements in the first period is ..... while the number of elements in in the fouth period is ..... .

30 Transition elements start to appear from period number ..... and their block consists of ..... groups.

31 The chemical activity of alkali metals ..... as we move from up to down while the chemical activity of halogens ..... as we move from up to down.

32 The atomic radius is measured by a unit called ..... .

33 The atomic radius is ..... proportional with the atomic number of the element in the same period.

34 Silicon and germanium are considered as ..... .

35 ..... are substances that cannot be separated into their components by chemical or physical methods.

36 Water can be separated into its components using a device called ..... .

37 Water is decomposed by electrolysis into two elements ..... and ..... .

38 Mixtures are classified into ..... and ..... .

39 ..... mixtures cannot be distinguished by the naked eye.

40 All matters are composed of small, similar units called ..... .

41 Molecules of ..... consist of atoms of the same type, while molecules of ..... consist of atoms for different elements

42 The number of atoms in a single molecule in some organic compounds may reach several thousand, as in ..... and ..... .

43 ..... are pure substances formed by the chemical combination of two or more elements in a fixed mass ratio.

44 Nitric acid consists of three ..... atoms, one hydrogen atom and one ..... atom.

45 Methane is from ..... molecules, while nitric acid is an ..... molecule.

46 Iron and cork can be distinguished by the difference in ..... .

47 Helium is used to fill ..... while nitrogen gas is used to fil ..... .

48 Carbon is considered from ..... atomic molecules, while ..... from polyatomic molecules

49 Red mercury oxide can be decomposed into ..... and ..... by heating.

Q6. What is meant by:

1 Matter

2 Atom

3 Atomic number

4 Atomic mass

5 Isotopes

6 Fertilizers

7 Mendeleev's periodic table

8 Moseley's periodic table

9 Modern periodic table

10 Metals

11 Non-metals

12 Valency

13 Picometer

14 Boiling point

15 Melting point

16 Pure substances

17 Element

18 Compound

19 Mixtures

20 Homogeneous mixture (Solution)

21 Heterogeneous mixture

22 Molecular formula

.....

.....

23 Physical properties

.....

.....

24 Chemical properties

.....

.....

Q7. Give one example of:

1 A molecule of an organic compound. (.....)

2 A molecule of an element consisting of a single atom. (.....)

3 A physical property to differentiate between materials. (.....)

4 A chemical property to differentiate between substances.

(.....)

5 An alloy made of iron added to some elements and it resists rusting.

(.....)

6 An alloy used in aircraft manufacturing. (.....)

7 An element used in the manufacture of electronic chips. (.....)

8 A low-density transparent material with 99.8% air content.

(.....)

9 A compound used in coloring house facades, papyrus, and statues.

(.....)

10 It regulates the calcium and phosphorus levels in the blood.

(.....)

Q8. Mention the roles of the following scientists:

1 Dalton

.....

2 Rutherford

.....

Q9. Write the chemical symbols for the following elements:

1 Carbon (.....) 2 Sodium (.....) 3 Chlorine (.....)

4 Zinc (.....) 5 Potassium (.....) 6 Silicon (.....)

7 Gold (.....) 8 Silver (.....) 9 Copper (.....)

10 Phosphors (.....) 11 Lead (.....) 12 Mercury (.....)

13 Chromium (.....)

Q10. Calculate the atomic number of:

1 An element at the end of the third period. (.....)

2 An alkali element in the fourth period. (.....)

3 An inert gas element in the first period. (.....)

4 An alkaline Earth element in the third period. (.....)

5 An element whose last energy level M has the same number of electrons as the energy level K. (.....)

6 An element in the second period and group 5A. (.....)

7 A divalent metal in the second period. (.....)

8 A divalent non-metal in the second period. (.....)

9 An element in the start of the second period. (.....)

Q11. Compare between:

1 Protons, neutrons and electrons according to:

a. Type of charge b. Location c. Mass

Points of Comparison	Protons	Neutrons	Electrons
a. Type of Charge	.....	.....	.....
b. Location	.....	.....	.....
c. Mass	.....	.....	.....

2 $^{32}_{16}S$ and $^{40}_{20}Ca$ elements according to:

a. Name **b.** Atomic number **c.** Atomic mass

d. Number of protons **e.** Number of neutrons

f. Number of electrons

g. Number of energy levels occupied by electrons

Points of Comparison	$^{32}_{16}S$	$^{40}_{20}Ca$
a. Name	.....	.....
b. Atomic Number	.....	.....
c. Atomic Mass	.....	.....
d. Number of Protons	.....	.....
e. Number of Neutrons	.....	.....
f. Number of Electrons	.....	.....
g. Number of Energy Levels Occupied by Electrons	.....	.....

3 The three isotopes of hydrogen according to:

a. Name of the isotope **b.** Symbol

c. Atomic mass **d.** Number of neutrons

Points of Comparison	The Three Isotopes of Hydrogen		
a. Name of the Isotope	.....	.....	.....
b. Symbol	.....	.....	.....
c. Atomic Mass	.....	.....	.....
d. Number of Neutrons	.....	.....	.....

4 Mendeleev's periodic table and Moseley's periodic table according to: The scientific basis of classifying elements.

Point of Comparison	Mendeleev's Periodic Table	Moseley's Periodic Table
The scientific basis of classifying elements	.....	.....

5 Group 1A and Group 7A according to:

a. Group name b. Its block

Points of Comparison	Group 1A	Group 7A
a. Group Name	.....	.....
b. Its Block	.....	.....

6 Group 2A and Group 0 according to:

a. Group name b. Its block

Points of Comparison	Group 2A	Group 0
a. Group Name	.....	.....
b. Its Block	.....	.....

Q12. Mention the difference between each of the following:

1 A mixture of sand with iron filings and a mixture of sugar in water, in terms of separation methods.

Point of Comparison	A mixture of sand with iron filings	A mixture of sand in water
Separation Method	.....	.....

2 Oxygen molecule and water molecule, in terms of the type of molecules:

Point of Comparison	Oxygen Molecule	Water Molecule
Type of Molecules	.....	.....

3 O_3 molecule and **C** molecule, in terms of:

a. Name b. Number of atoms that make up the molecule.

Points of Comparison	O_3	C
a. Name	.....	.....
b. Number of atoms that make up the molecule	.....	.....

4 Water and honey, in terms of viscosity

Point of Comparison	Water	Honey
Viscosity	.....	.....

5 Cork and iron, in terms of density.

Point of Comparison	Cork	Iron
Density	....	....

6 Toothpaste and lemon, in terms of their effect on litmus paper.

Point of Comparison	Toothpaste	Lemon
Effect on Litmus Paper	....	....

7 Butter mold and aerogel plate, in terms of their melting point.

Point of Comparison	Butter Mold	Aerogel Plate
Melting Point	.....	.....

Q13. Mention the scientific reason:

1 The nucleus of the atom is positively charged.

.....

.....

2 The atom is electrically neutral.

.....

.....

3 The mass of the atom is concentrated in its nucleus.

.....

.....

4 The symbol of sodium is **Na** not **S** as it is expected.

.....

.....

5 It is advised to reduce the use of lots of fertilizers.

.....

.....

6 The atomic mass is often greater than the atomic number.

.....

.....

7 The atomic mass equals the atomic number in the hydrogen atom.

.....

8 The atomic mass is double the atomic number in the $^{16}_{8}\mathbf{O}$ atom.

.....

.....

9 Energy level (L) is saturated with 8 electrons.

10 Level (M) is saturated with electrons first before level (N).

11 Energy is different in the energy levels in which electrons are revolving.

12 The element isotopes have the same atomic number and different atomic masses.

13 Scientists had made many attempts for classifying elements.

14 Moseley rearranged elements in his table according to their atomic numbers.

15 Calcium ($_{20}$**Ca**) is a metal.

16 Chlorine ($_{17}$**Cl**) is a non-metal.

17 Sodium ($_{11}$**Na**) is an element from alkali metals.

18 Calcium ($_{20}$**Ca**) is an element from alkaline Earth metals.

19 Fluorine ($_{9}$**F**) is an element from halogens.

20 It is difficult to identify metalloids from their outermost energy level.

21 The valency of noble gases is zero.

22 The hydrogen molecule is considered an element molecule, while the sodium chloride molecule is a compound molecule.

23 Seawater is considered a homogeneous mixture.

24 Wood floats on the surface of water, while iron sinks in it.

25 Iron filings can be easily separated from flour.

26 The nitric acid molecule is considered an inorganic compound molecule.

27 Helium gas is used to fill balloons.

28 Nitrogen is used to fill car tires instead of air.

29 Stainless steel alloy is used in the manufacture of cookware.

30 Aircraft structures are made of aluminum and titanium alloy.

31 Aerogel is used in making jackets for research scientists in Antarctica.

32 Vitamin D is considered one of the important vitamins for the human body.

Q14. What happens:

1 To the atomic radius when increasing the atomic number of elements of the same group from top to bottom?

2 To the atomic radius when increasing the atomic number of elements in one period from left to right?

.....

3 If the number of electrons in the last energy level is less than 4 electrons? (According to the type of element)

.....

4 If the number of electrons in the last energy level is greater than 4 electrons? (According to the type of element)

.....

5 If the number of electrons in the last energy level is complete with electrons? (According to the type of element)

.....

6 If the atomic radius increases?
(According to the boiling and melting points of alkali metals)

.....

7 If the atomic radius increases?
(According to the boiling and melting points of halogens)

.....

8 To the acidified water if it is subjected to electrolysis?

.....

9 If you heat red mercury oxide compound?

.....

10 If we dip a sunflower leaf in lemon juice?

.....

11 If we put a piece of wood in water?

.....

12 If we manufacture iron cookware?

.....

13 If we use carbon dioxide gas to fill balloons?

.....

Q15. Answer the following question:

1 What are the building units for calcium carbonate material?

2 What are the most important attempts to classify elements?

3 What is the scientific basis for classifying elements in Mendeleev's periodic table?

4 What is the scientific basis for classifying elements in Moseley's periodic table?

5 What is the scientific basis for classifying elements in the Modern periodic table?

6 An element's atomic number is 11 and its atomic mass is 23. Find:

a. The number of electrons

b. The number of protons

c. The number of neutrons

7 An element has 13 protons and the number of its neutrons is more than the number of its protons by one Find:

a. The number of electrons **b.** The number of nucleons

c. The electronic configuration

d . The number of electrons in the outermost energy level

.....

.....

.....

.....

8 An element H, its electrons are distributed in two energy levels, and the outermost energy level contains 4 electrons, and there are 6 neutrons in its nucleus.

a. Show by drawing the electronic configuration for this element.

b. Find its atomic mass.

c. Write the symbol of this element indicating the number of both A and z.

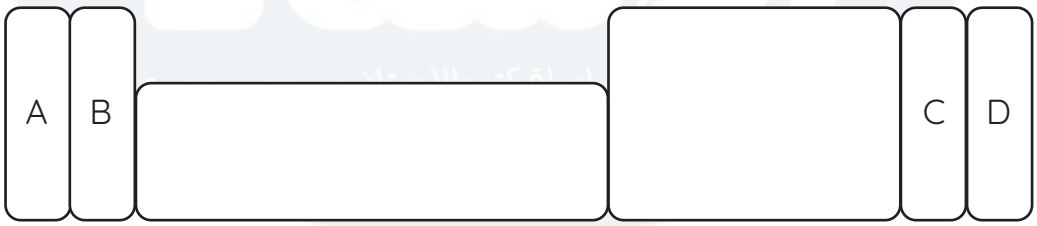
.....

.....

.....

.....

9 The following figure shows some groups of the periodic table



From the previous table, complete the following sentences:

a. The elements of group (A) are known by ..... elements, while the elements of group (D) is known by ..... .

b. The valency of elements in group (B) is ....., While the valency of elements in group (C) is ..... .

10 The following figure represents third period:

A	B	C	D	E	F	G	H

Find:

a. The atomic number of the element H that is considered an inert gas.

.....

.....

b. Which of the following elements is considered an alkali (A-B-D-G)?

.....

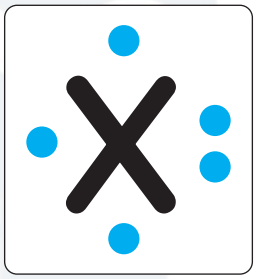
c. Which of the following elements is considered an alkali earth (A-B-D G)?

.....

d. Which of the following elements is considered a halogen (A-B-D-G)?

.....

11 From the opposite Lewis dot structure of element (X) located in period 3, find:



a. The atomic number for element.

.....

.....

.....

b. Valency for element.

.....

c. Type of element.

.....

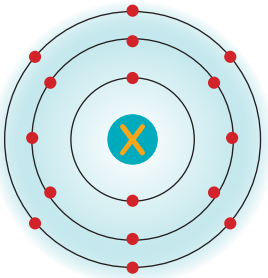
d. The atomic number that precedes it in the same period.

.....

e. The atomic number that precedes it in the same group.

.....

12 The following figure shows the electronic configuration of element (X). Determine:



a. The atomic number

.....

.....

b. Place of element in the periodic table

.....

.....

c. Type of element

.....

.....

d. Valency of element

.....

.....

.....

13 The following table represents the elements of the second period:

Group number	1A	2A	3A	4A	5A	6A	7A	0
Lewis Formula	Li	Be	B	C	N	O	F	Ne

Determine:

a. The valence of the element boron. (.....)

b. The type of element lithium. (.....)

c. A metal element with a valence of divalent. (.....)

d. A metalloid element. (.....)

e. A halogen element. (.....)

f. A non-metal element with a valence of divalent. (.....)

g. An inert element. (.....)

Unit 1 Lesson 4: Chemical Bonds

Q1 Choose the correct answer:

(Week 6 Test)

1 An atom of a/an ..... changes into a positive ion when it loses an electron.

a. metal **b.** non-metal **c.** inert gas **d.** halogen

2 An atom of ..... changes into a negative ion when it gains an electron.

a. alkaline Earth metals **b.** alkali

c. inert gases **d.** halogens

3 The number of electrons in the potassium ion ($_{19}K$) is ..... electrons.

a. 8 **b.** 18 **c.** 19 **d.** 20

4 The number of electrons in the outermost energy level of an oxygen ion ($_{8}O$) is ..... electrons.

a. 8 **b.** 6 **c.** 4 **d.** 10

5 The number of energy levels in a sulfur ion ($_{16}S$) is ..... the energy levels in its atom.

a. greater than **b.** less than **c.** equal to **d.** twice

6 The bond formed between an alkali element and a halogen element is a/an..... bond.

a. single covalent **b.** double covalent

c. triple covalent **d.** ionic

7 The bond that forms between two atoms of halogens elements is a/an ..... bond.

a. single covalent **b.** double covalent

c. triple covalent **d.** ionic

8 The closest inert gas to the element ($_{20}Ca$) is ..... .

a. Helium **b.** Neon **c.** Argon **d.** Krypton

9 What is the molecular formula of a compound resulting from the combination of an element (X) from alkali metals with an element from halogens (Y)?

a. YX_2 **b.** YX **c.** X_2Y **d.** XY

10 The element whose atomic number is 17 forms a covalent bond with the element whose atomic number is ..... .

a. 1 **b.** 11 **c.** 12 **d.** 13

11 An atom of element (A) from the fifth group is linked to three hydrogen atoms to form a compound with the formula ..... and the bond in the molecules is a ..... .

a. AH – single covalent **b.** HA_3 – triple covalent

c. HA – single covalent **d.** AH_3 – triple covalent

12 The number of bonds in a methane molecule is ..... single covalent bond(s).

a. one **b.** two **c.** three **d.** four

13 Which of the following represents an ionic bond?

(a) (b) (c) (d)

14 An atom of element (X) binds to two hydrogen atoms, as shown in the opposite figure.

What type of bonding occurs in this molecule, and what is the group number of element (X) in the periodic table?

a. Ionic – Group 6A **b.** Ionic – Group 2A

c. Covalent – Group 6A **d.** Covalent – Group 2A

15 What is the symbol of the ion whose nucleus contains 27 nucleons, including 14 neutrons?

a. Si^{+4} **b.** Al^{+3} **c.** Mg^{+2} **d.** Na^{+1}

16 An element from alkaline Earth metals forms an ionic bond with an element in group ..... .

a. 5A **b.** 6A **c.** 7A **d.** 0

17 The number of energy levels in a hydrogen ion is ..... the number of its atom.

a. greater than **b.** less than **c.** equal to **d.** twice

18 When an atom turns into a positive ion, the number of electrons ..... .

a. decreases **b.** increases

c. remains the same **d.** doubles

Q2 Correct the underlined part in the following sentences:

(Week 6 Test)

1. The ionic bond occurs between non-metals and non-metals. (.....)
2. The covalent bond occurs between two metals. (.....)
3. The bond in the potassium chloride molecule is covalent. (.....)
4. The bond between the elements of the sixth group and the elements of the seventh group is ionic. (.....)
5. The bond in the sodium molecule is double covalent. (.....)
6. The bond between carbon and oxygen in the methane molecule is a single covalent bond. (.....)
7. The outermost level in the nitrogen ion (7N) contains 5 electrons. (.....)
8. The closest inert gas to the sodium atom (11Na) is helium. (.....)

Q3 Write the scientific term:

(Week 6 Test)

1. It is a metal atom that has lost one electron or more. (.....)
2. It is a non-metallic atom that has gained one electron or more. (.....)
3. It is a bond that results from electrical attraction between a positive ion and a negative ion. (.....)
4. They are compounds that dissolve in water and conduct electricity. (.....)
5. They are compounds that poor electrical conductors. (.....)
6. It is a bond that forms between two atoms of different non-metallic elements or between two similar atoms of a non-metallic element. (.....)
7. It is a bond that results from two atoms sharing one pair of electrons, with each atom contributing one electron. (.....)

8 It is a bond that results from each atom sharing two electrons.
(.....)

9 It is a bond that results from each atom sharing three electrons.
(.....)

10 It is the simplest molecule of an organic compound in which a carbon atom is bonded to four hydrogen atoms. (.....)

Q4. Complete the following sentences:

(Week 6 C.W)

1 The molecules of materials are different in their ..... and ..... of atoms and the way they are linked together.

2 The difference in the bonding of atoms with each other leads to the difference in the ..... and ..... properties of the molecules of the resulting compound.

3 Types of chemical bonding are ..... bonding and ..... bonding.

4 An atom becomes a positive ion when ..... electrons.

5 An atom changes into a ..... ion when it gains one or more electrons.

6 The ..... bond arises due to the ..... attraction between a positive ion and a negative ion.

7 The closest inert gas to sodium is ....., while the closest inert gas to chlorine is ..... .

8 The chlorine atom is bonded to the sodium atom by an ..... bond.

9 The number of energy levels in a sodium atom is ..... than the number of energy levels in its ion.

10 The number of energy levels in a chlorine atom is equal to the number of energy levels in its ..... .

11 A ..... bonding arises from two atoms of the same non-metallic element or between two non-metallic atoms of two different elements.

12 The bond in the hydrogen molecule is a ..... covalent bond, while the bond in the nitrogen molecule is a ..... covalent bond.

13 The bond in the hydrogen chloride molecule is a ....., while the bond in the sodium chloride molecule is an ..... .

14 The melting point of ionic compounds is ....., while the melting point of covalent compounds is ..... .

15 When an aluminum atom ($_{13}Al$) is converted into a ..... ion, the number of electrons in its ion is ..... .

Q5 What is meant by each of the following:

(Week 6 H.W)

1 Positive ion

.....

.....

2 Negative ion

.....

.....

3 Ionic bond

.....

.....

4 Covalent bond

.....

.....

5 Single covalent bond

.....

.....

Q6 Give one example for each of the following:

(Week 6 Test)

1 The simplest molecule of an organic compound. (.....)

2 A molecule containing a single covalent bond. (.....)

3 A molecule containing a double covalent bond. (.....)

4 A molecule that contains a triple covalent bond. (.....)

5 A molecule that contains an ionic bond. (.....)

Q7 Compare between:

(Week 6 H.W)

1 Positive ion and negative ion in terms of:

P.O.C	Positive Ion	Negative Ion
Definition	....	....
Number of Electrons and Protons	....	....
Number of Energy Levels	....	....

2 Ionic compounds and covalent compounds in terms of:

P.O.C	Ionic Compounds	Covalent Compounds
Solubility in Water	....	....
Melting Point	....	....
Boiling point	....	....
Electrical Conductivity	....	....

Q8 Give reasons for:

(Week 6 H.W)

1 The bond in the sodium chloride molecule is ionic.

.....

.....

.....

.....

2 The bond in a hydrogen chloride molecule is single covalent. (Week 6 H.W)

.....

.....

.....

.....

3 The bond in the water molecule is a single covalent.

.....

.....

.....

.....

4 The bond in the oxygen molecule is a double covalent bond.

.....

.....

.....

.....

5 The bond in the nitrogen molecule is a triple covalent bond.

.....

.....

.....

.....

6 When a metal loses an electron, it turns into a positive ion.

.....

.....

7 When a halogen gains an electron, it turns into a negative ion.

.....

.....

8 A bond can form between two chlorine atoms, but a bond cannot form between two sodium atoms.

.....

.....

9 Ionic compounds are neutral in charge.

.....

.....

Q9 What happens if:

(Week 6 Test)

1 A chlorine atom bonds with a sodium atom?

.....

.....

2 A chlorine atom bonds with a hydrogen atom?

.....

.....

3 Two chlorine atoms bond together?

.....

.....

4 Two hydrogen atoms bond with an oxygen atom?

.....

.....

5 Two oxygen atoms bond together? (Week 6 Test)

.....

.....

6 Two nitrogen atoms bond together? (Week 6 Test)

.....

.....

7 A carbon atom bonds to four hydrogen atoms? (Week 6 Test)

.....

.....

Unit 2 Lesson 1: Electric Forces

Q1 Choose the correct answer:

(Week 7 H.W)

1 A positive electric charge is formed at the rod that is made of ..... when we rub it with a piece of silk.

a. glass b. ebonite c. copper d. cotton

2 When we rub a rod of ebonite with silk, ... are transferred from the silk to the ebonite.

a. protons b. electrons c. neutrons d. atoms

3 A rod made of ..... can be charged with a static charge when rubbed with a suitable material, provided that the hand-held part is insulated.

a. iron b. glass c. ebonite d. plastic

4 The electrostatic series is the arrangement of some materials according to the ease of losing ..... from them.

a. protons b. electrons c. neutrons d. molecules

5 A/An ..... is used to protect constructions and buildings from lightning strikes.

a. Coulomb meter b. electroscope
c. lightning rod d. voltmeter

6 The ..... device is used to indicate the electrical state of the body.

a. Hoffman voltmeter b. **electroscope**
c. lightning rod d. voltmeter

7 The weak electric charge is measured by the ..... device.

a. Coulomb meter b. lightning rod
c. electroscope d. voltmeter

Q2 Write the scientific term:

(Week 7 H.W)

1 It is composed of electrical charges accumulated on the surfaces of objects when electrons are lost or gained. (.....)

2 It is an arrangement of some materials according to how easily they lose electrons. (.....)

3 It is the device used to measure weak electric charges. (.....)

4 It is a system used to protect buildings and constructions from lightning strikes. (.....)

5 It is the area surrounding the electric charges where their effect appears without contact. (.....)

6 They are imaginary lines showing the path taken by a small, freely moving positive charge placed in it. (.....)

7 It is a device used to determine the type of electric charge. (.....)

Q3 Complete the following sentences:

(Week 7 H.W)

1 When rubbing an ebonite rod with a piece of wool, the ebonite rod acquires ..... electric charges, while the piece of wool acquires ..... electric charges.

2 Different electric charges ....., while similar electrical charges ..... .

3 The electric charges accumulated on the surfaces of objects are known as ..... electricity.

4 Objects that can be charged with a static electric charge can be made of non-conductive materials, such as ..... and ..... .

5 The electrostatic series is the arrangement of some materials according to their easiness of ..... electrons.

6 From the rubbing electrostatic materials are ....., ..., and cotton.

7 Weak electrical charges are measured by ..... .

8 During metal plating by electrostatic plating, the required painted object is charged with ..... electric charges, while the spray paint is charged with ..... electric charges.

9 ..... is a system used to protect buildings and constructions from lightning strikes.

10 Electric power lines start from the ..... charge and end at the ..... charge.

11 Electric force lines are ..... lines that do not intersect with each other.

12 The electric force lines end at ..... of charged metal objects and do not penetrate them.

13 The electroscope device is known as ..... .

14 The electroscope is used to detect the presence of a ..... on a body and determine its ..... .

Q4 What is meant by:

(Week 7 H.W)

1 Static electricity

.....

.....

2 Electrostatic series

.....

.....

3 Electric field

.....

.....

4 Electric field lines

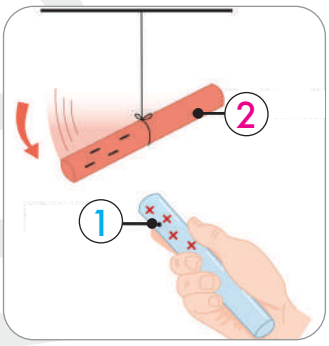
.....

.....

Q5 Answer the following questions:

(Week 7 H.W)

Q1. Look at the following figure and answer the questions below:



1 What is the name of rod (1)?

.....

2 What is the type of charges of rod (1)?

.....

3 What is the name of rod (2)?

.....

4 What is the type of charges of rod (2)?

.....

5 What happens when the two rods are brought closer together?

.....

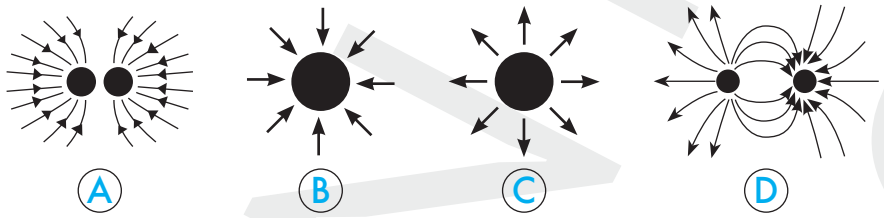
6 What happens when the second rod is replaced with another rod of the same type as the first rod and with the same charge?

.....

7 What happens when the second rod is replaced with another rod of the same type as the first rod and not charged?

.....

Q2. The following figures represent electric force lines:



Complete the following sentences:

1 Figure (A) represents the electric force lines for two ..... charges.

2 Figure (B) represents the electric force lines for a ..... charge.

3 Figure (C) represents the electric force lines for a ..... charge.

4 Figure (D) represents the electric force lines for two ..... charges

Q3. What is the type of the formed charge on each piece of artificial leather and a wooden rod when rubbed together? With explanation.

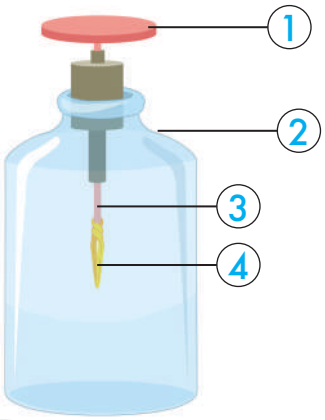
.....

.....

.....

.....

Q4. The opposite figure represents one of the devices.
Answer the following questions:



1 What is the name of the device?

.....

2 What is it used for?

.....

.....

.....

.....

3 Write the labels in the opposite drawing

.....

.....

Q6 Give reasons for: (Week 7 H.W)

1 The electrostatic electricity is called static electricity.

.....

.....

2 Small paper scraps are attracted to the ebonite rod when rubbed with silk.

.....

.....

3 Small paper scraps are not attracted to the copper rod when rubbed with wool.

.....

.....

4 Metal chains are hanged from fuel transport vehicles and touch the ground.

.....

.....

5 The glass rod becomes positively charged when rubbed with silk.

.....

.....

6 It is preferable to paint metals using the electrostatic painting method than other methods.

.....

.....

7 Lightning rods are used in buildings and constructions.

.....

.....

Q7 What happens if:

(Week 7 H.W)

1 We rub the ebonite rod with a piece of silk and bring them close to each other?

.....

.....

2 We hang a rod of ebonite after rubbing it with silk and bring a rod of glass close to it after rubbing it with silk?

.....

.....

3 We touch a charged flashlight disc with your hand?

.....

.....

4 We approach a positively charged glass rod close to a negatively charged electroscope?

.....

.....

5 We approach a negatively charged ebonite rod close to an negatively charged electroscope?

.....

.....

Unit 2 Lesson 2: Magnetic Forces

Q1 Choose the correct answer:

(Week 8 Tests)

1 All the following are forms of artificial magnets, except ..... .

a. a magnetic needle
b. a bar magnet
c. a horseshoe
d. an aluminum piece

2 ..... is from magnetic materials.

a. Gold
b. Silver
c. Copper
d. Cobalt

3 ..... is from non-magnetic materials.

a. Iron
b. Nickel
c. Aluminum
d. Cobalt

4 A/An ..... is an ancient tool used to determine directions.

a. compass
b. hourglass
c. sundials
d. balance

5 The strength of the magnet increases in the..... of the magnet.

a. middle
b. edge
c. side
d. surface

6 The magnetic field lines crowd together at the ..... .

a. north pole only
b. north and south Poles
c. magnet tip
d. south pole only

7 The magnetic field lines are directed from the ..... to the ..... outside the magnet.

a. north pole – south pole
b. south pole – north pole
c. middle of the magnet – edge
d. edge of the magnet – middle

Q2 Write the scientific term:

(Week 8 H.W)

1 It is a natural stone that has the ability to attract objects made of iron. (.....)

2 They are materials that are not attracted to the magnet. (.....)

3 They are materials that are attracted to the magnet. (.....)

4 It is an ancient tool used to determine the four geographical directions. (.....)

5 Similar poles repel and different poles attract. (.....)

6 It is the area surrounding the magnet where the effects of its magnetic force appears. (.....)

7 They are imaginary lines representing the strength of the magnetic field. (.....)

Q3 Complete the following sentences:

(Week 8 Tests)

1 From the forms of industrial magnets are bar magnets, ..., and ..... .

2 A magnet has two poles, which are ..... pole and ..... pole.

3 The force of attraction of a magnet is greatest at the ..... and decreases when approaching to the ..... .

4 The compass box is made of ..... or ..... .

5 The compass is a freely moving ..... magnet fixed at its ..... .

6 When a magnet is suspended freely, it takes the direction of the ..... and the ..... .

7 The north magnetic pole is represented by the symbol ....., while the south magnetic pole is represented by the symbol ..... .

8 When a magnet is divided into several parts, each part becomes a new ..... .

9 ..... magnetic poles repel each other, while different poles ..... .

10 Magnetic field lines start from the ..... pole and end at the ..... pole outside the magnet.

Q4 What is meant by:

(Week 8 Tests)

1 Magnetic materials

.....

2 Non-magnetic materials

.....

3 Law of Attraction and Repulsion

.....

.....

4 Magnetic field

.....

.....

5 Magnetic field lines

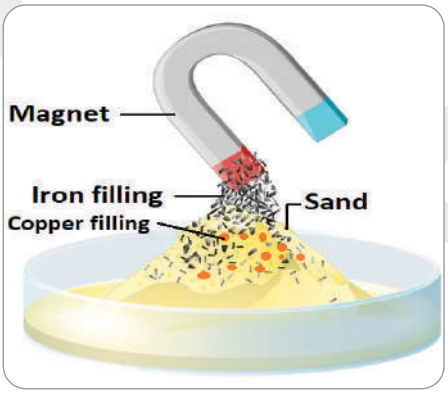
.....

.....

Q5 Answer the following questions:

Q1. Study the following figure and answer the questions below:

(Week 8 C.W)



1 What is the type of the mixture?

.....

2 How can the mixture be separated?

.....

.....

3 Why is the copper not attracted to the magnet?

.....

4 Why are the iron filings attracted to the magnet?

.....

Q2. Classify these materials according to their attraction to the magnet:

(Week 8 C.W)

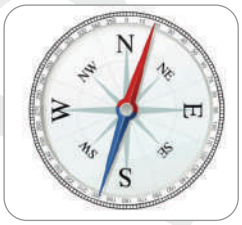
Silver – Iron – Gold – Copper – Aluminum – Steel – Nickel

.....

.....

.....

Q3. Complete: (Week 7 C.W)

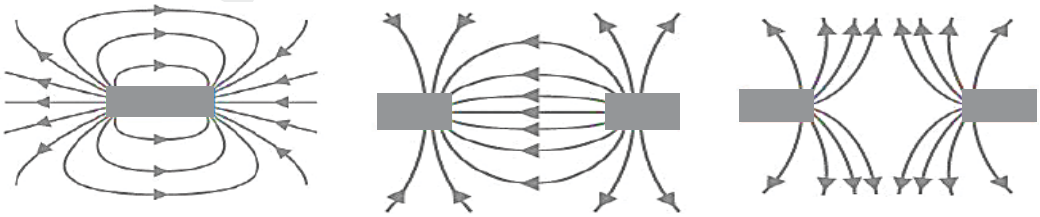


1 The opposite figure represents ..... .

2 It is used in .....

..... .

Q4: The following figures represent magnetic field lines: (Week 8 C.W)



A B C

Which one represents?

1 Magnetic field lines between two different magnetic poles. ( )

2 Magnetic field lines between two similar magnetic poles. ( )

3 Magnetic field lines of two poles of the same magnet. ( )

Q6 Give reasons for: (Week 8 Tests)

1 Nickel and cobalt are considered magnetic materials.

.....

.....

2 Aluminum and silver are non-magnetic materials.

.....

.....

3 A compass box is made of copper or plastic and not of iron.

.....

.....

4 Iron filings are attracted in large amounts at each pole of the magnet.

.....

.....

Q7 What happens if:

(Week 8 H.W)

1 A magnet is brought close to a mixture of iron filings and silver turnings?

.....

.....

2 We dip a magnet in a box containing iron filings?

.....

.....

3 A magnet is suspended freely from its middle?

.....

.....

4 We divide a single magnet into several parts?

.....

.....

5 We bring the south pole of a magnet closer to the south pole of another freely suspended magnet?

.....

.....

6 We bring the south pole of a magnet closer to the north pole of another freely suspended magnet?

.....

.....

Unit 2 Lesson 3: Gravitational Forces

Q1 Choose the correct answer:

(Week 7 Test)

1 ..... forces affect certain dimension, such as gravitational forces and magnetic forces.

a. Flexibility b. Collision c. Friction d. Field

2 ..... discovered that all material objects attract each other.

a. Rutherford b. Newton c. Coulomb d. Moseley

3 ..... is an example of contact forces.

a. Gravity b. Magnetic c. Friction d. Electrostatic

4 ..... is an example of field forces.

a. Gravity b. Contact c. Friction d. Flexibility

5 Earth's lines of gravitational forces are represented by..... lines.

a. magnetic field b. electric field

c. gravitational field d. length

6 From the factors affecting the gravitational force between two objects is the ..... .

a. volume of both objects b. type of material of both objects

c. mass of both objects d. density of both objects

7 The phenomenon of tides occurs ..... daily.

a. once b. twice c. three times d. four times

8 Tides are most active when the moon is shaped like a ..... .

a. full moon b. crescent c. first quarter d. last quarter

9 If an object has a mass of 5 kg, its weight on Earth's surface equals ..... .

a. 5 N b. 50 N c. 40 N d. 50 kg

10 If the weight of an object on the Earth's surface equals 60 newtons, its mass equals ..... .

a. 60 kg b. 6 kg c. 6 N d. 40 kg

11 The intensity of the gravitational field on the moon is equal to ..... the intensity of the gravitational field on the Earth.

a. ½ b. ¼ c. 1/6 d. 1/8

12 The ratio between the weight of an object at the base of a mountain to its weight at its top is ..... one.

a. greater than b. less than c. equal to d. double

Q2 Complete the following sentences:

(Week 9 H.W)

1 The force affecting an apple falling to the ground is the ..... force.

2 ..... forces are those that act on objects upon contact, such as ..... force, ... force, and ..... force.

3 Earth's gravitational force is expressed by lines of ..... .

4 The greater the mass of the two objects, the ..... the force of attraction between them.

5 The greater the distance between the two objects, the ..... the gravitational force between them.

6 The phenomenon of tides occurs in the Bay of Fundy in Canada, and the difference between the high and low water levels can reach up to ..... meters.

7 The phenomenon of tides is used to purify the ..... from impurities.

8 The phenomenon of tides can be used in ..... as one of the renewable energy sources.

9 Black holes are formed when a ..... collapses at the end of its life.

10 Black holes are characterized by an immense ..... force, so that ..... can't escape from them

11 ..... is the revolution of any object in space along a curved path around a central object.

12 The moon's movement around the Earth, the movement of ....., and the movement of ..... are examples of orbital motion.

13 The rotation of electrons around the nucleus of an atom is an example of ..... .

14 The gravitational field strength on the Earth's surface ..... as we move farther from its center.

15 The weight of an object ..... from one planet to another.

16 ..... is used to measure the weights of objects.

17 The measuring unit of weight is ....., while the measuring unit of mass is ..... .

18 Weight = ... X .....

19 If the mass of an object is 500 g, then its weight is ..... .
(Knowing that the gravitational field strength on the Earth's surface is 10 N/kg.)

20 If an object weighs 50 newtons, its mass on the moon's surface equals ..... .
(Knowing that the gravitational field strength on the Earth's surface is 10 N/kg.)

Q3 What is meant by:

(Week 9 Test)

1 Earth's gravitational force

.....

.....

2 Contact forces

.....

.....

3 Field forces

.....

.....

4 Orbital motion

.....

.....

5 Object's mass

.....

.....

6 Object's weight

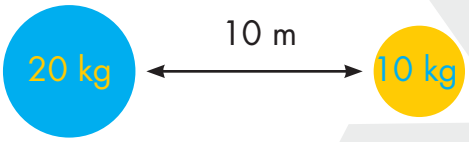
.....

.....

Q4 Answer the following questions:

(Week 9 C.W)

Q1. The following figure represents two bodies of the same material:



1 Does either body attract the other with greater force? And why?

.....

.....

2 What happens to the gravitational force if the mass of both bodies becomes 20 kg?

.....

3 What happens to the gravitational force if the distance between the centers of both bodies equals 20 meters?

.....

Q2. The following figures represent a body made up of the same material placed in three different places:

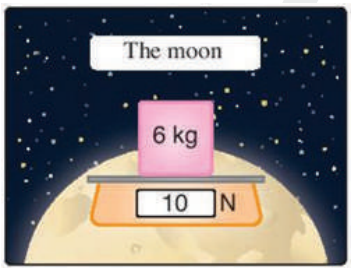


Figure A

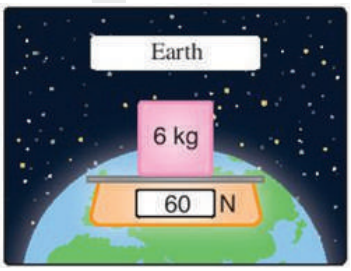


Figure B

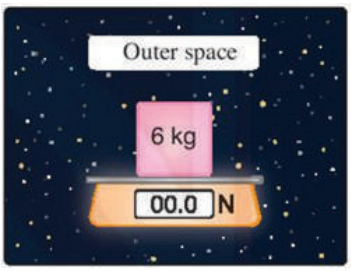


Figure C

1 Which of these places is the Earth, which is the space, and which is the moon?

.....

.....

2 Why does the body weight vary from a place to another?

.....

.....

Q3. The opposite figure represents two eggs. One of them is an ostrich egg and the other is a chicken egg. Which has the heaviest weight in outer space? And why?

Both of them have no weight in the outer space due to the absence of gravitational force.

Q5 Give reasons for:

(Week 9 Test)

1 All objects fall downward to the Earth's center.

.....

.....

2 There is a field of magnetic force and no field of collision force.

.....

.....

3 The gravitational force between two objects increases when their masses increase.

.....

.....

4 The weight of an object on the Earth's surface is greater than the weight of the same object on the Moon's surface.

.....

.....

5 An object's weight changes from one planet to another.

.....

.....

6 An object has no weight in the outer space.

.....

.....

Q6 What happens if:

(Week 9 H.W)

1 Gravity is absent?

.....

.....

2 Objects' masses increase relative to the gravitational force between them?

.....

.....

3 The distance between two objects decreases relative to the gravitational force between them?

.....

.....

4 An object is transferred from the moon's surface to the Earth's surface relative to its mass?

.....

.....

5 An object is transferred from the moon's surface to the Earth's surface relative to its weight?

.....

.....

Unit 3 Lesson 1: Cells and Life

Q1 Choose the correct answer:

1 The building unit of a living organism is the ..... .

a. matter b. cell c. atom d. tissue

2 A group of different tissues can form a/an ..... .

a. organ b. system c. organism d. tissue

3 A group of organs form a/an ..... .

a. organ b. system c. tissue d. organism

4 ..... are multicellular organisms.

a. Bacteria b. Paramecia

c. Amoebae d. Mushroom fungi

5 Unicellular organisms include all the following organisms, except ..... .

a. bacteria b. paramecia

c. amoebae d. mushroom fungi

6 Euglena is a ..... organism.

a. protozoa b. prokaryotes c. unicellular d. multicellular

7 Mushroom fungus is a ..... organism.

a. protozoa b. prokaryotes c. unicellular d. multicellular

8 Unicellular organisms ..... .

a. consist of many cells

b. have cells specialized in their functions

c. are microscopic organisms that aren't visible to the naked eye

d. are large organisms that are visible to the naked eye

9 All the following are characteristics of birds, except that ..... .

a. they are multicellular organisms

b. their cells are specialized in their functions

c. they are microscopic organisms that can't be seen by the naked eye

d. they are large organisms that can be seen by the naked eye

10 All the following are found in the cell of a bird's body, except the ..... .

a. cell wall
b. nucleus
c. Golgi apparatus
d. centrosome

11 All the following are found in the cells of a bean plant, except the ..... .

a. cell wall
b. nucleus
c. Golgi apparatus
d. centrosome

12 All the following are found in bacterial cells, except the ..... .

a. cell wall
b. cytoplasm
c. Golgi apparatus
d. plasma membrane

Q2 Write the scientific term:

1 They are the building units of a living organism. (.....)

2 It is a group of similar cells that work together and perform one function. (.....)

3 It is a group of different tissues that work together and perform one function. (.....)

4 It is a group of different organs that work together. (.....)

5 It is the arrangement of living organisms into groups according to their similarities and differences to ease their study and identification. (.....)

6 They are undifferentiated cells that have the ability to transform into all differentiated cells of the body. (.....)

7 They are simple organisms whose bodies consist of a single, unspecialized cell. (.....)

8 They are complex organisms consisting of many cells that are distinguished and specialized in their work. (.....)

Q3 Complete the following sentences:

1. The building unit of a living organism is the .....
2. The human body consists of a group of .....
3. Each organ consists of a group of .....
4. Classification is the arrangement of living organisms based on the similarities and differences for the ease of .....
5. Living organisms are classified according to ..... and .....
6. Eukaryotes are divided into ..... and .....
7. Unicellular organisms include ....., ..., and yeast fungus.
8. Multicellular organisms include ..... and .....
9. ..... cells can transform into many different types of cells.
10. Stem cells are characterized by several properties, including their ability to be ..... through division and their ability to produce .....
11. Studying stem cells helps to enhance understanding of the way ..... occur, produce healthy cells to replace ..... ones, and test new drugs before their use to determine their .....

Q4 Cross out the odd word, then mention what connects the rest of the words:

1. Bacteria – Euglena – Paramecium – Amoeba (.....)

.....

2. Yeast fungus – Mushroom fungus – Bread mold fungus – Penicillium fungus (.....)

.....

3. Corn – Birds – Worms – Bacteria (.....)

.....

4. System – Cell – Rabbit – Organ (.....)

.....

5 Cell wall – Chloroplast – Centrosome – Golgi apparatus (.....)

.....

6 Cell membrane – Chloroplast – Centrosome – Golgi apparatus

(.....)

.....

7 Cell wall – Do not contain a true nucleus – Plasma membrane – Mitochondria (.....)

.....

8 White blood cells – Red blood cells – Stem cells – Nerve cells

(.....)

.....

Q5 Compare between:

1 Prokaryotes and eukaryotes, in terms of:

Definition – Characteristics

P.O.C	Prokaryotes	Eukaryotes
Definition	.....	.....
Characteristics	.....	.....

2 Animal cells, plant cells, and bacterial cells, in terms of:

Cell wall - Plasma membrane - Centrosome - Chloroplasts - Golgi apparatus - Vacuoles

P.O.C	Animal Cells	Plant Cells	Bacterial Cells
Cell Wall			
Plasma Membrane			
Centrosome			
Chloroplasts			
Golgi Apparatus			
Vacuoles			

Q6 What is meant by:

1 Prokaryotes:

.....

2 Eukaryotes:

.....

.....

3 Classification:

.....

.....

4 Cell:

.....

5 Tissue:

.....

6 Organ:

.....

7 Unicellular organisms:

.....

8 Multicellular organisms:

.....

9 Stem cells:

Q7 Give reasons for:

1 Living organisms are classified according to their similarities and differences.

2 Prokaryotes can't be stem cells.

3 Paramecia and euglena are considered unicellular organisms.

4 Bacteria are considered unicellular living organisms.

5 Bacteria differ from euglena, although they are both unicellular organisms.

6 Lions are considered multicellular organisms.

Q8 Study the following figure that represents a living organism, and then answer the questions below:

1 What is the name of this living organism?

2 What is the classification of this living organism?

3 What are the differences between this living organism and bacteria?

4 What are the similarities and difference between this living organism and yeast fungus?

Q9 Study the following figures that represent some living organisms, and then answer the questions below:

1 What are the kinds of these organisms?

.....

2 Why do we see these organisms under a microscope?

.....

.....

3 Which of these organisms is considered from protozoa?

.....

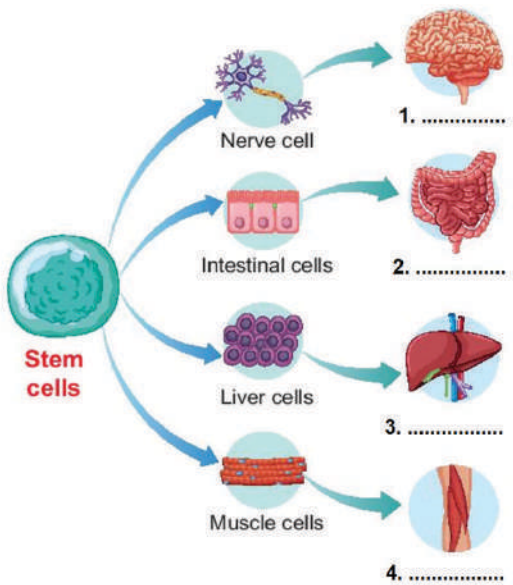
Q10 The following figure shows some of the transformations of stem cells; answer the questions below:

1 Write the names of the cells in the figure.

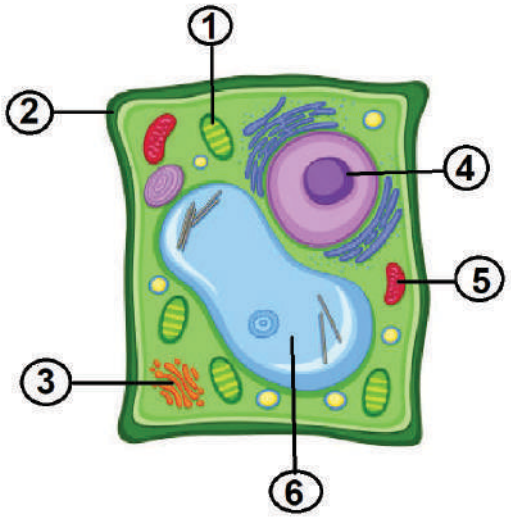
.....

2 Write the names of the organs in the figure.

1. .....
2. .....
3. .....
4. .....



Q11 **The following figure represents the structure of a plant cell; answer the questions below:**



1 Labels the numbers.

1. ..... 2. .....
3. .....
4. ..... 5. .....
6. .....

2 Which of the previous parts are found in the cells of the rabbit's skin tissue?

.....

.....

3 Which of the previous parts is found in prokaryotic cells?

.....

Unit 3 Lesson 2: General Characteristics of Living Organisms

Q1 Choose the correct answer:

1 All the following organisms are consumers, except ..... .
a. humans b. birds c. fish d. plants

2 All the following organisms are producers, except ..... .
a. beans b. cats c. green algae d. wheat

3 Chloroplast contains ..... which absorb(s) light energy from the Sun.
a. chlorophyll b. nucleus c. bacteria d. mitochondria

4 An adult frog breathes by its ..... .
a. lungs b. skin c.skin and lungs d. tracheal tubes

5 Insects breathe by their ..... .
a. lungs b.skin c. skin and lungs d. tracheal tubes

6 Dogs breathe by their ..... .
a. lungs b. skin c. skin and lungs d. tracheal tubes

7 Plants get oxygen from air by their ..... .
a. plastids b. stomata c. mitochondria d. nucleus

8 The process of food breakdown and energy release occurs in the ..... .
a. plastids b. stomata c. mitochondria d. nucleus

9 ..... is used in purifying the blood from toxins.
a. Hoffmann voltmeter b. Electroscope
c. Dialysis d. Coulomb meter

10 ..... plant open its leaves during the day and closes them at night.
a. Gazania b. Mimosa c. Sunflower d. Cotton

11 Leaves of ..... plant are drooping and dangling when you touch them.
a. gazania b. mimosa c. sunflower d. cotton

12 Sweat glands excrete ..... through the skin.
a. urine b. carbon dioxide c. wastes d. water

13 Amoeba moves by the ..... .
a. cilia b. flagellum c. pseudopodia d. fins

14 Paramecium moves by the ..... .
a. cilia b. flagellum c. pseudopodia d. fins

Q2 Write the scientific term:

1. It is the process by which a living organism obtains the materials used to build its body and energy. (.....)
2. It is the substance that the plant makes to obtain energy. (.....)
3. It is the process by which a plant converts light energy into chemical energy in the presence of water and carbon dioxide gas. (.....)
4. It is a process by which a living organism gets rid of harmful waste and excess materials the body does not need. (.....)
5. They are specialized cells in opening and closing the stomata in plants. (.....)
6. It's a plant that opens its leaves during the day and closes them at night. (.....)
7. It's a plant that moves with the movement of the Sun. (.....)
8. They are organisms that breathe through their skin and lungs. (.....)
9. They are organs that get rid of excess water, salts, and urea in the form of urine. (.....)

Q3 Complete the following sentences:

1. All living organisms share common characteristics, such as nutrition, ..., ..., excretion and .....
2. Inorganic materials used in the process of photosynthesis are ..... and .....
3. The two substances produced by the process of photosynthesis are ..... and .....
4. Light energy is converted into ..... energy stored in ..... in the photosynthesis process.
5. Carbon dioxide + Water + Sunlight → ..... + ...
6. ..... + ... → Carbon dioxide + Water + Energy
7. ..... transport oxygen and digested food from the heart to the rest of the body.
8. Veins transport ..... and ..... from the ..... to the heart.

9 The transport process in plants is parallel to the ..... in humans.

10 The transport system in the plant consists of ..... and .....

11 Humans get rid of the exhaled air from carbon dioxide and .....

12 Human get rid of excess water and salts through the ..... in the form of urine.

13 The plant gets rid of excess water and carbon dioxide through the .....

14 ..... control the opening and closing of the stomata.

15 The respiratory organs in cockroaches are ....., while the respiratory organs in adult frogs are ..... and .....

Q4 Compare between:

1 Producers and consumers, in terms of: Definition – Examples

P.O.C	Producers	Consumers
Definition	.....	.....
Examples	.....	.....

2 Humans, fish, and insects, in terms of:

Respiratory organ – Medium for obtaining oxygen

P.O.C	Humans	Fish	Insects
Respiratory Organ	.....	.....	.....
Medium for Obtaining Oxygen	.....	.....	.....

3 Amoeba, Euglena, and Paramecium, in terms of Means of movement

P.O.C	Amoeba	Euglena	Paramecium
Means of Movement	.....	.....	.....

Q5 What is meant by:

1 Autotrophs organisms

.....

.....

2 Heterotrophs organisms

.....

.....

3 Cellular respiration

.....

.....

4 Movement

.....

.....

Q6 Mention the benefit of each one of the following:

1 Chloroplasts:

.....

.....

2 Xylem tissue

.....

3 Phloem tissue

.....

4 Arteries

.....

.....

5 Veins

6 Dialysis machine

7 Stomata in plants

8 Kidneys in humans

9 Lungs in humans

10 Guard cells in plants

11 The human muscular system

12 Tracheal tubes in insects

Q7. Give reasons for:

1 Green algae are considered producer organisms.

2 Rabbits are considered consumer organisms.

3 The food path in the digestive system is considered a closed path.

Q8 The following figure represents the process of artificial photosynthesis; answer the questions below:

1 What is the name of the gas we supply it with?

.....

2 What is the name of the gas that it absorbs?

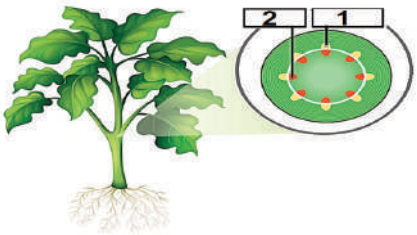
.....

3 What are the benefits of this process?

a. .....

b. .....

Q9 The following figure represents a cross section of a plant stem; answer the questions below:



1 Label the data on the drawing.

a. ..... b. .....

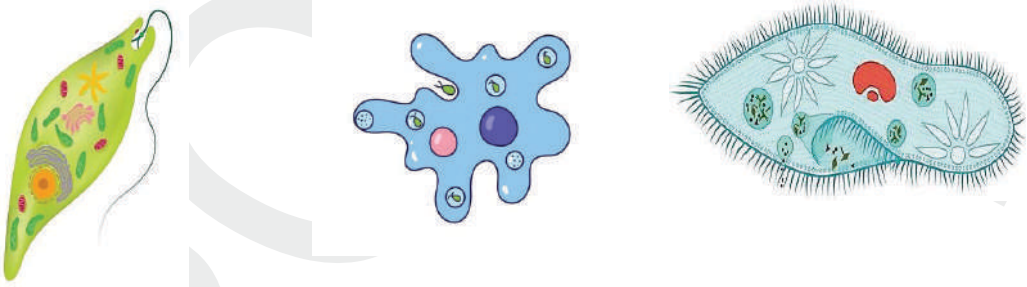
2 What are the benefits of each?

.....

.....

.....

Q10 The following figure shows some living organisms; answer the questions below:



a. b. c.

1 What is the type of these living organisms? .....

2 What is the name of these living organisms?

a. ..... b. ..... c. .....

3 Why do we see these organisms under a microscope?

.....

.....

4 Which of these organisms do we consider to be protozoa?

.....

5 How do these organisms move?

a. .....

b. .....

c. .....

Unit 3 Lesson 3: Microbes

Q1 Complete the following sentences:

1. Microbes are prokaryotes, including bacteria, such as ....., ..., and .....
2. Eukaryotic microbes include protozoa, such as ....., and fungi, such as ..... and .....
3. A plant needs nitrogen to form ....., which is used in .....
4. ..... live on the roots of leguminous plants in special structures known as .....
5. Farmers leave the roots of beans in the soil after harvesting the crop to decompose by ..... into nitrogenous compounds.
6. Yogurt is a protein-rich food essential for ..... and ....., and it is rich in calcium necessary for the health of ..... and .....
7. Yogurt bacteria work to convert ..... into lactic acid.
8. The green color in the blue cheese is caused by a fungus known as .....
9. The Scottish scientist ..... discovered that ..... produces a substance that inhibits the growth and reproduction of a type of bacteria.
10. The ..... substance is extracted from the fungus penicillium notatum, which is used to combat the bacteria causing certain diseases, such as ..... and .....
11. Yeast fungus is used in the production of ..... and .....
12. Harmful microbes can enter the human body through ....., ..., or by penetrating the skin and reaching the bloodstream.
13. Symptoms of dysentery include ..... with ..... as well as loss of appetite.
14. Symptoms of ..... include high fever, headache, and abdominal swelling.

Q2 Compare between:

Dysentery and typhoid diseases, in terms of:

a. Causative microbe

b. Location of the microbe

c. Methods of transmission of infection

d. Symptoms

e. Treatment method

P.O.C	Dysentery	Typhoid
Causative Microbe	.....	.....
Location of the Microbe	.....	.....
Methods of Transmission of Infection	.....	.....
Symptoms	.....	.....
Treatment Method	.....	.....

Q3 What is meant by each of:

1 Microbes

2 Root nodule bacteria

Q4 Mention the importance of each of the following:

1 Leaving the roots of the pea plants in the soil after harvesting the crop

2 Yogurt bacteria

3 Penicillium roqueforti mushrooms

4 Penicillium notatum

5 Yeast fungus

Q5 Give one example of each of the following:

1 Prokaryotic bacteria.

2 Eukaryotic fungi.

3 A harmful protozoan microbe.

4 A harmful eukaryotic microbe.

5 An element used by plants for the growth of their cells and tissues.

6 Bacteria living on the roots of legumes. .....

7 Fungus used in the manufacture of antibiotics.

.....

8 Mushroom used as a source of vitamin B complex. .....

9 A food rich in protein and calcium. .....

10 Diseases caused by Salmonella Typhi Bacteria. .....

11 A disease caused by Entamoeba Histolytica. .....

Q6 What happens when:

1 A plant does not obtain carbon, hydrogen, and oxygen elements?

.....

2 A plant does not get nitrogen?

.....

.....

3 Farmers leave the roots of clover plants in the soil after harvesting the crop?

.....

.....

4 Nodular bacteria on the roots of a bean plant are absent?

.....

5 We add pre-prepared yogurt to the milk immediately after boiling?

.....

.....

6 You do not keep yogurt in the refrigerator?

.....

7 You leave yogurt in a warm place for more than 5 hours?

.....

.....

8 You do not add a spoonful of sugar to the saline solution used in making pickled olives?

.....

9 A person eats food and drinks water contaminated with Salmonella typhi bacteria?

.....

10 A person eats food contaminated with Entamoeba histolytica bacteria?

.....

Q7 The following figure represents one of the types of bacteria; answer the questions below:

1 What is the name of the bacteria in the figure?

.....

2 What is the name of the disease caused by the bacteria shown in the figure?

.....

3 What are the symptoms of that disease?

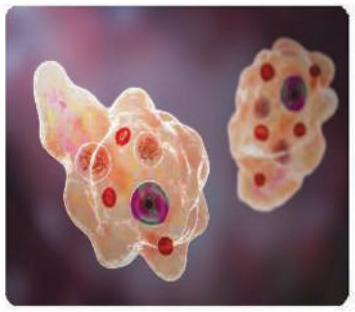
.....

.....

4 What is the treatment method?

.....

Q8 The following figure represents one of the types of single-celled organisms; answer the questions below:



1 What is the name of the living organism in the figure?

.....

2 What is the name of the disease caused by the bacteria shown in the figure?

.....

3 Where do these bacteria live in the human body?

.....

4 What are the symptoms of that disease?

.....

.....

.....

Unit 4 Lesson 1: The Earth and the Solar System

Q1 Put (✓) or (✗), then correct the incorrect sentences:

1 The four planets closest to the Sun have thick crusts, except for Venus. ( )

.....

2 Jupiter is similar to Mercury and Uranus in the composition of its atmosphere. ( )

3 The length of the shadow can be relied on to determine the time. ( )

4 The Earth rotates on its axis every 365.5 days. ( )

.....

5 The Earth rotates around its horizontal axis every 24 hours. ( )

.....

6 The length of the shadow formed at sunset is the greatest possible. ( )

7 Spring begins after the winter solstice. ( )

8 The apparent height of the Sun is the lowest in winter. ( )

9 The succession of seasons leads to a change in temperature. ( )

10 The apparent position of the Sun in the sky changes from east to west as a result of the Earth's rotation around its axis. ( )

11 Crops vary according to the seasons of the year. ( )

Q2 Write the scientific term:

1 It is the season in which the number of daylight hours is greater than any other season of the year. (.....)

2 It is the season in which the number of night hours is greater than the number of day hours. (.....)

3 It is the planet that has a thin crust full of craters. (.....)

4 It is the planet that is mainly composed of oxygen and nitrogen gases. (.....)

Q3 Cross out the odd word:

1. Mercury – Mars – Earth – Saturn (.....)
2. Watermelon – Lettuce – Cucumber – Zucchini (.....)
3. Number of daylight hours 13 hours – High temperature – The axis of rotation is tilted towards the Sun – Number of night hours 12 hours (.....)

Q4 Complete the following sentences:

1. The solar system consists of a star, ..., and ..... planets orbiting it.
2. ..... precedes Earth in proximity to the Sun, and it is followed by .....
3. The crust of ..... is full of craters caused by meteor impacts.
4. The crust of ..... is thicker than the crust of Venus.
5. Jupiter and ..... are similar in that they have the same atmospheric components, but they do not have a ..... in them.
6. Mars is known as the ..... planet, while Neptune is known as the ..... planet.
7. The largest planet in size is ....., and Earth ranks ..... in terms of size.
8. Earth completes one full rotation around its axis every .....
9. The Earth's axis is tilted at an angle of 23.5° from the ..... line on the plane of its orbit around the Sun.
10. As a result of the Earth's rotation around its axis in front of the Sun, the sequence of ..... and the apparent movement of ..... occur.
11. The apparent motion of the Sun is the change in the Sun's ..... from east to west due to the Earth's rotation around its axis.
12. The number of planets with a crust is ....., while the number of planets with no active volcanoes is .....
13. The winter solstice begins on ....., while the ..... equinox begins on the 23rd of September.
14. The northern end of the Earth's axis is tilted at ..... from the Sun in summer.

15 The duration of day and night is nearly equal in ..... and .....

16 The ancient Egyptians used ..... to determine the time based on the length and direction of the shadow.

17 ....., ..., and watermelon are among summer crops, while oranges and lettuce are among ..... crops.

Q5 Compare between:

1 Venus and Saturn, in terms of: Crust – Atmosphere – Volcanic activity

P.O.C	Venus	Saturn
Crust	.....	.....
Atmosphere	.....	.....
Volcanic Activity	.....	.....

2 The Earth's revolution around the Sun and its rotation around its axis, in terms of the result of the rotation.

P.O.C	The Earth's Revolution Around the Sun	The Earth's Rotation Around Its Axis
The Result of the Rotation	.....	.....

3 Winter and summer, in terms of:

Number of daylight hours – Number of night hours – Proximity to the Sun

P.O.C	Winter	Summer
Number of Daylight Hours	.....	.....
Number of Night Hours	.....	.....
Proximity to the Sun	....	....

Q6 State the benefit of the following:

Sundial

.....

.....

Q7 Give reasons for:

1 The planets of the solar system do not collide with each other while orbiting the Sun.

.....

.....

2 The surface of Mercury is full of craters.

.....

3 The atmosphere of Uranus appears blue-green in color.

.....

.....

4 There are no volcanoes on the surface of Saturn.

.....

5 The angles of incidence of sunlight on different areas of the Earth's surface are different.

.....

Q8 What happens when:

1 Earth rotates around the Sun in a complete revolution?

.....

2 Earth rotates around its axis in a complete rotation?

.....

3 There is methane gas within the components of the atmosphere of Uranus?

.....

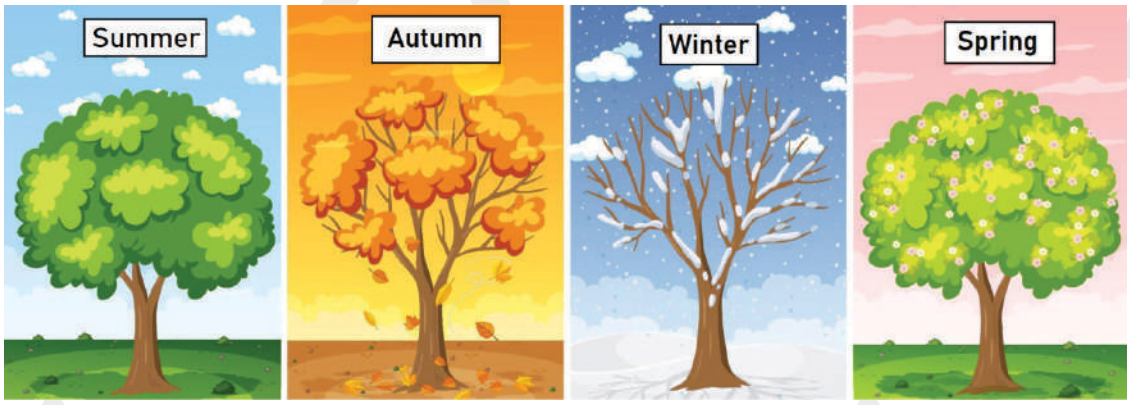
4 The Earth's axis tilts toward the Sun one time and away from the Sun another time?

.....

5 The numbers of hours of night and day are equal?

.....

Q9 Study the figures showing the seasons of the year, then complete the sentences below:



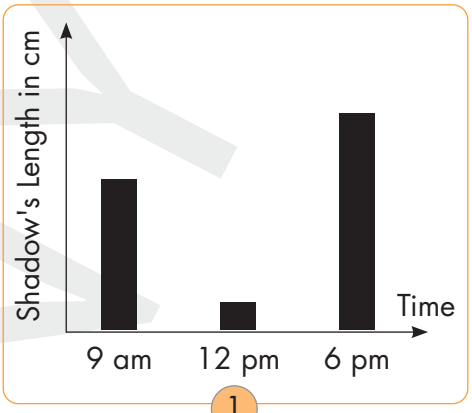
1 The northern end of the Earth's axis is tilted toward the Sun in ....., and is tilted away from the Sun in .....

2 In ..... and ....., the northern end of the Earth's axis is not tilted.

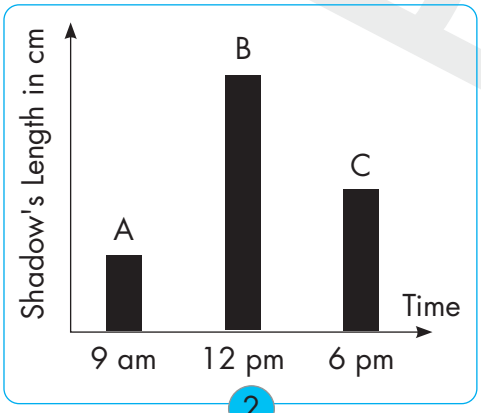
3 The variation in the tilt of the Earth's axis leads to

.....

Q10 **Look at the following figures that express the length of a building's shadow from nine o'clock in the morning until six o'clock in the evening, then answer the questions below:**



1



2

1 Why does the length of the shadow differ at the three times in figure 1?

.....

2 In figure 1, what is the correct order of the shadow according to sunrise and sunset?

.....

Unit 4 Lesson 2: Lunar Eclipse

Q1 Choose the correct answer:

1 The number of phases of the moon during the Arabic month as it revolves around the Earth is ..... .

a. 5 b. 6 c. 7 d. 8

2 The moon is in the second quarter after its full ..... revolution around the Earth.

a. 1/4 b. 1/2 c. ¾ d. 1

3 The phase in which the moon appears as a dark disk is in the ..... .

a. beginning of the Arabic month b. middle of the Arabic month

c. end of the Arabic month d. 14th of the Arabic month

4 The moon appears in different phases because ..... .

a. of the Earth's rotation around the moon

b. of the change in the area of the illuminated part of the moon

c. the moon is in the Earth's shadow area

d. the moon is in the Earth's penumbra

5 The time it takes the moon to rotate around the Earth is ..... the time it takes to rotate around its axis.

a. greater than b. less than c. equal to d. half

6 If the month of Ramadan begins on 11 March, the moon will reach its first quarter on ..... March.

a. 18 b. 22 c. 25 d. 28

7 When the illuminated side of the moon is facing the Sun and the dark side is facing the Earth, it's in the ..... phase.

a. Crescent b. Full Moon c. New Moon d. Gibbous

8 The lunar eclipse occurs in/on ..... of the Arabic month.

a. the beginning b. the middle

c. the end d. day 21

9 ..... is considered the closest celestial body to Earth.

a. Venus b. Mars c. The moon d. The Sun

10 When the moon enters the region of the ....., it is not an eclipse.

a. moon's shadow
b. Earth's shadow
c. Earth's penumbra
d. moon's penumbra

Q2 Complete the following sentences:

1 The moon takes about ..... to orbit the Earth.
2 The moon orbits the Earth from ..... to .....
3 The phase of the moon following the Crescent is ....., while the phase following the Last Quarter is .....
4 When the moon appears as a fully illuminated disk, it is in the ....., and when the disk is dark, it is in the ..... phase.
5 The moon becomes a First Gibbous after 11 days from the New Moon phase, and ¾ of its surface is illuminated from the .....
6 ..... occurs when the moon is entirely in the Earth's shadow.
7 The moon appears as a ..... disk illuminated with faint light when it is entirely in the Earth's umbra.

Q3 What is meant by:

1 The moon

.....

.....

2 Moon phases

.....

.....

.....

3 Umbra (shadow area)

.....

.....

4 Penumbra

5 Transparent objects

6 Opaque objects

7 Lunar eclipse

8 Total eclipse

9 Partial eclipse

Q4 Various questions:

1 Mention the phases of the moon in the first half of the Arabic month.

2 What is the time period between the First Quarter and the Second Gibbous phases?

3 What does the moon look like when it completes:

a. Half orbit? b. Quarter orbit? c. Three-quarter orbit?

4 Mention the lunar eclipses types and their causes?

.....

.....

.....

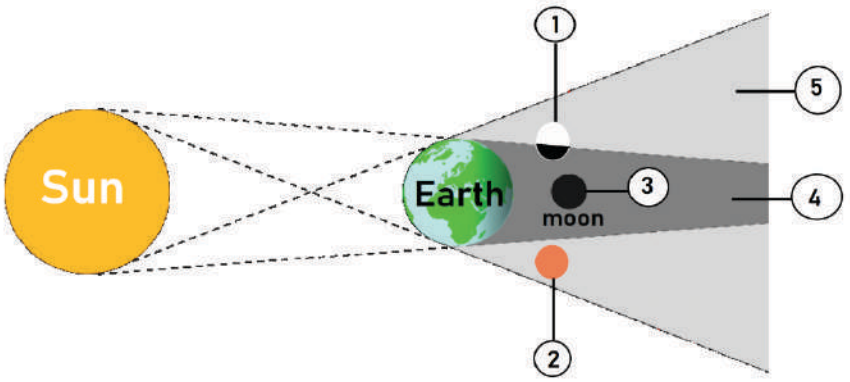
.....

5 Arrange the lunar phases in ascending order based on the size of the dark portion of the moon's surface: First Crescent – Full Moon – First Quarter – Second Gibbous – New Moon

.....

.....

Q5 Study the following figure, then answer the questions below:



1 What is the name of areas 4 and 5?

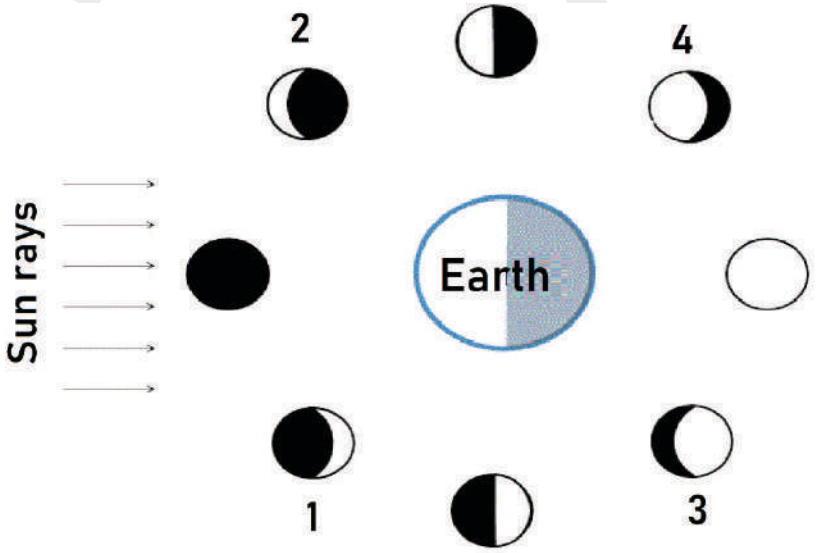
.....

2 What is the name of the phenomenon that occurs to the moon in positions 1 and 3?

.....

3 Complete: The moon position number 2 appears as a .....

Q6 The following figure shows the moon phases; answer the questions below:



1 What are the names of phases (1), (2), (3), and (4)?

.....

.....

2 What is the difference between phases (1) and (3)?

.....

.....

Q7 Give reasons for:

1 The moon appears bright even though it is an opaque body.

.....

2 An observer on the Earth's surface sees only one face of the moon.

.....

.....

.....

3 The moon on the 14th of the Arabic month is called a Full Moon.

.....

4 A shadow is formed when a book is placed in front of a lit electric lamp.

5 No shadow is formed when a glass plate is placed in front of a lit electric lamp.

6 The partial lunar eclipse phenomenon occurs.

7 The total lunar eclipse phenomenon occurs.

Q8 What happens when:

1 The moon is entirely located in the Earth's shadow?

2 The moon is entirely located in the Earth's penumbra?

3 Part of the moon is located in the penumbra of Earth?

Unit 1 Lesson 1 , 2 , 3

Q1. Choose the correct answer:

1 Sphinx statue consists of rocks made up of ..... .

a. sand stone b. limestone c. granite d. basalt

2 The model of ..... is the first model for the atom on an experimental base.

a. Dalton b. Mendeleev c. Moseley d. Rutherford

3 The atom consists of positively charged ..... .

a. electrons b. neutrons c. nucleus d. levels

4 Negatively charged particles that revolve around the nucleus are ..... .

a. protons b. electrons c. neutrons d. particles

5 The mass of subatomic components is measured in atomic mass units, and its symbol is ..... .

a. U b. Y c. W d. H

6 The chemical symbol of potassium is ..... .

a. B b. P c. K d. Po

7 The chemical symbol of lead element is ..... .

a. Bp b. Pb c. Le d. Bb

8 NPK fertilizer consists of ..... element that helps to make the plant leaves green.

a. K b. N c. P d. F

9 ..... element is necessary for strengthen roots of plants.

a. K b. N c. P d. F

10 The number of positive protons represents the ..... .

a. atomic number

b. mass number

c. number of energy levels

d. number of elements

11 Inside the nucleus of the atom, mostly the number of ..... is more than or equal the number of protons.

a. atomic number b. electrons c. neutrons d. particles

12 An element contains 20 nucleons and the number of negative charges is 9 so the number of neutral charges is ..... .

a. 12 b. 10 c. 11 d. 9

13 An atom of an element in which electrons revolves around it at three energy levels, and the outermost energy level contains 2 electrons, so its atomic number is ..... .

a. 2 b. 12 c. 14 d. 8

14 An element's outermost energy level (L) contains a number of electrons equal to the number of electrons in the level (K), so its atomic number is ..... .

a. 4 b. 6 c. 8 d. 12

15 An element's outermost in which energy level (M) contains one electron, so its atomic number is ..... .

a. 3 b. 9 c. 11 d. 19

16 Deuterium is considered one of the isotopes of ..... element.

a. oxygen b. nitrogen c. hydrogen d. carbon

17 ..... is considered one of homogeneous mixtures.

a. A mixture of iron filings and sawdust

b. Salt solution

c. A mixture of oil with water

d. A mixture of sand and water

18 From molecules that consists of the same type of atoms is ..... molecule.

a. HCl b. H_2O c. O_2 d. NH_3

19 ..... can be decomposed through electrolysis by using Hoffman's voltammeter.

a. Water b. Mercuric oxide c. Carbon d. Nitric acid

20 We can distinguish between ..... through thermal conductivity.

a. iron and copper
b. rubber and plastic
c. copper and rubber
d. silver and iron

21 Salt solution can be separated through ..... .

a. filtration process
b. magnetic attraction
c. evaporation and condensation
d. precipitation process

22 ..... is from polyatomic element molecules.

a. Carbon
b. Oxygen
c. Ozone
d. Iron

23 ..... is from substances that can be separated by chemical methods.

a. Red mercuric oxide
b. Table salt solution
c. A mixture Iron filings and sand
d. A mixture of oil and water

24 The molecular formula for a compound that consists of one nitrogen atom, one hydrogen atom, and three oxygen atoms is ..... .

a. HO_3N
b. HNO_3
c. O_3HN
d. NHO_3

25 The toothpaste is colored with ..... color on adding a litmus paper on it.

a. blue
b. red
c. violet
d. green

26 Balloons can be filled with ..... gas.

a. oxygen
b. nitrogen
c. chlorine
d. helium

27 ..... is considered from the compounds.

a. Ozone
b. Iron
c. Mercury
d. Egyptian indigo dye

28 The number of atoms in sulphuric acid molecule H_2SO_4 ..... .

a. 5
b. 8
c. 7
d. 6

29 The molecules of the following organic compounds consists of thousands of atoms except ..... .

a. hemoglobin
b. plastic polymer
c. methane
d. vitamin D

Q2. Put (✓) or (✗):

1. The atom is the building unit of the matter. (✓)
2. Electrons are found inside the nucleus. (✗)
3. There are four main energy levels around the nucleus. (✗)
4. The charge and magnitude of protons are larger than electrons. (✗)
5. The chemical symbol of sodium element is S. (✗)
6. The atomic mass is larger than the atomic number for all elements. (✗)
7. The third energy level is saturated with 18 electrons. (✓)
8. The energy level K is the largest level in energy. (✗)
9. The electronic configuration for an element that contains 15 neutrons and 14 protons has three energy levels. (✓)
10. The outermost energy level of magnesium contains 2 electrons. (✓)

Q3. Correct the underlined words:

1. Methane is considered one of inorganic compounds. (Water or Mercury oxide)
2. Oxygen is considered from mixtures. (Salt solution)
3. Table salt solution can be separated by filtration. (Mixture of sand and water)
4. Helium gas is used in filling car tires. (Nitrogen)
5. Density and melting points from the chemical properties of the matter. (Physical properties)
6. Heterogeneous mixtures can't be separated by physical means. (Homogeneous mixtures)
7. From organic compounds is $NaHCO_3$ (CH_4)

Q4. Write the scientific term:

1 It is everything that has a mass and occupies a space. (Matter)

2 The building unit of the matter. (Atom)

3 Tiny particles can't be subdivided. (Atoms)

4 The scientist who made the first scientific theory about the atom. (Dalton)

5 The space that contains protons and neutrons. (Nucleus)

6 Paths in which electrons revolve around the nucleus. (Energy levels)

7 Particles that include protons, neutrons and electrons. (Subatomic particles)

8 Positively charged particles located inside the nucleus. (Protons)

9 Particles whose mass can be neglected while their charge can't. (Electrons)

10 Particles whose charge can be neglected while their mass can't. (Neutrons)

11 Chemical compounds used in improving the agricultural productivity. (Fertilizers)

12 A type of fertilizer contains nitrogen, phosphorus and potassium. (NPK Fertilizers)

13 An element necessary for greening of plant leaves. (Nitrogen)

14 An element necessary for strengthening roots. (Phosphorus)

15 An element necessary for healthy plant growth. (Potassium)

16 Number of protons found inside the nucleus of the atom. (Atomic number)

17 The summation of numbers of both protons and neutrons. (Mass number)

18 The difference between atomic mass and atomic number. (The number of neutrons)

19 Different forms of elements have the same atomic number and different atomic masses. (Isotopes)

20 The simplest pure form of matter where its components cannot be separated by physical or chemical methods. (Element)

21 Materials composed of two or more substances that are not chemically combined. (Mixtures)

22 Mixtures whose components can be distinguished with the naked eye. (Heterogenous mixture)

23 A pure substance is formed as a result of the chemical combination of two or more elements in a fixed mass ratio, and its components can be separated by various methods. (Compounds)

24 A semi-metal used in the manufacture of electronic chips. (Silicon)

25 An alloy that maintains its strength at high temperatures and is used in the manufacture of military aircraft structures. (Aluminum-Titanium alloy)

26 A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule. (Molecular formula)

27 Properties that can be observed and some of them can be measured. (Physical Properties)

28 The properties that only appear when a chemical reaction occurs that leads to a change in the shape and composition of the substance. (Chemical Properties)

Q5. Complete the following sentences:

1 The electrons revolve around the nucleus with a very high speed.

2 The chemical symbol of potassium is K.

3 The chemical symbol for the silver element is Ag.

4 NPK fertilizer consists of phosphorus which is necessary to strengthen the roots.

5 Fertilizers are chemical compounds used in improving agricultural production.

6 An element's atomic number is 8 so its electronic configuration is 2 , 6 .

7 The outermost energy level for any atom doesn't contain more than 8 electrons

8 The second energy level is L.

9 The number of main energy levels is seven.

10 The number of electrons necessary to saturate the first four energy levels can be determined by the mathematical relation $2n^2$.

11 An element's nucleus contains 27 nucleons and the number of neutrons is 14 so the number of electrons is 13

12 Isotopes are different forms for one element having the same atomic number and different in mass number.

13 Each period ends with the elements of group (0) and this group is preceded by group 7A.

14 The second period starts with elements of group 1A and ends with elements of group (0).

15 The modern periodic table consists of 7 periods and 18 groups.

16 The modern periodic table consists of 4 blocks.

17 Elements of block-s are located on the left side of the periodic table and consist of two groups while elements of block-f are located at the bottom of the periodic table.

18 The Nobel gases are located in the p block and contain one group(s).

19 The elements of d block are located in the middle of the periodic table and it contains 10 Group(s).

20 The boiling point of bromine is higher than the boiling point of chlorine.

21 The elements of the same groups have the same valency and properties.

22 The scientific basis in which Mendeleev's periodic table is made was arranging elements according to their atomic masses.

23 The scientific basis in which Moseley's periodic table is made was arranging elements according to their atomic numbers.

24 The scientific basis in which the modern periodic table is made was arranging elements according to their atomic numbers and the way of filling energy sublevels with electrons.

25 The scientist Moseley discovered that the properties of the elements are related to their atomic numbers not to atomic masses as Mendeleev believes.

26 The block-p starts with group 3A and ends with group (0).

27 The elements of halogens and Nobel gases are located in block P.

28 All elements of s block are metals except Hydrogen that is considered a non-metal gas.

29 The number of elements in the first period is 2 while the number of elements in in the fouth period is 18.

30 Transition elements start to appear from period number four and their block consists of ten groups.

31 The chemical activity of alkali metals increases as we move from up to down while the chemical activity of halogens decreases as we move from up to down.

32 The atomic radius is measured by a unit called picometer.

33 The atomic radius is inversely proportional with the atomic number of the element in the same period.

34 Silicon and germanium are considered as metalloids.

35 Elements are substances that cannot be separated into their components by chemical or physical methods.

36 Water can be separated into its components using a device called Hofmann's voltameter.

37 Water is decomposed by electrolysis into two elements Oxygen gas and hydrogen gas.

38 Mixtures are classified into homogenous mixtures and heterogeneous mixtures.

39 Heterogeneous mixtures cannot be distinguished by the naked eye.

40 All matters are composed of small, similar units called atoms.

41 Molecules of elements consist of atoms of the same type, while molecules of compounds consist of atoms for different elements

42 The number of atoms in a single molecule in some organic compounds may reach several thousand, as in hemoglobin and Vitamin-D.

43 Compounds are pure substances formed by the chemical combination of two or more elements in a fixed mass ratio.

44 Nitric acid consists of three oxygen atoms, one hydrogen atom and one nitrogen atom.

45 Methane is from organic compound molecules, while nitric acid is an inorganic compound molecule.

46 Iron and cork can be distinguished by the difference in density.

47 Helium is used to fill ballons while nitrogen gas is used to fill car tires.

48 Carbon is considered from mono atomic molecules, while ozone from polyatomic molecules

49 Red mercury oxide can be decomposed into mercury and oxygen gas by heating.

Q6. What is meant by:

1. Matter

   It is anything that has mass and volume (occupies space).

2. Atom

   It is the smallest building unit of any matter.

3. Atomic number

   It is the number of protons inside the nucleus of the atom.

4. Atomic mass

   It is the sum of the number of protons and neutrons inside the nucleus of the atom.

5. Isotopes

   They are different forms of the same element that have the same atomic number but differ in mass number.

6. Fertilizers

   They are chemical compounds that are used to improve the agricultural production.

7. Mendeleev's periodic table

   It is the first real periodic table for classifying elements, in which the scientist Mendeleev arranged elements in an ascending order according to their atomic masses.

8. Moseley's periodic table

   It is the periodic table that was made by scientist Moseley, in which elements were arranged in an ascending order according to their atomic numbers.

9. Modern periodic table

   It is the periodic table that was made by a group of scientists, in which elements were arranged in an ascending order according to their atomic numbers and the way of filling energy sublevels with electrons.

10. Metals

    They are elements whose outermost energy levels contain 1, 2, or 3 electrons.

11 Non-metals

They are elements whose outermost energy levels contain 5, 6, or 7 electrons.

12 Valency

It is the number of unpaired electrons found in the outermost (last) energy level in Lewis structure.

13 Picometer

It is the unit of measuring atomic radius.

14 Boiling point

It is the temperature at which matter changes from a liquid state to a gaseous state.

15 Melting point

It is the temperature at which matter changes from a solid state to a liquid state.

16 Pure substances

They are substances whose components can't be separated by physical methods.

17 Element

It is the simplest pure form of matter that can't be broken down into simpler forms.

18 Compound

It is a pure substance formed from the chemical combination of two or more elements in fixed mass ratios.

19 Mixtures

They are substances composed of two or more substances that are not chemically combined, allowing them to be separated by physical methods.

20 Homogeneous mixture (Solution)

It is a mixture in which its components can't be distinguished by the naked eye.

21 Heterogeneous mixture

It is a mixture in which its components can be distinguished by the naked eye.

22 Molecular formula

It is a symbolic formula that expresses the type and the number of atoms that form the molecule.

23 Physical properties

They are properties of substances that can be observed and measured in some cases.

24 Chemical properties

They are properties of substances that only appear when a chemical reaction occurs, resulting in a change in both the shape and composition of the substance.

Q7. Give one example of:

1 A molecule of an organic compound. (Methane molecule)

2 A molecule of an element consisting of a single atom. (Carbon molecule)

3 A physical property to differentiate between materials. (Density)

4 A chemical property to differentiate between substances. (Litmus paper)

5 An alloy made of iron added to some elements and it resists rusting. (Stainless steel alloy)

6 An alloy used in aircraft manufacturing. (Aluminum-titanium alloy)

7 An element used in the manufacture of electronic chips. (Silicon)

8 A low-density transparent material with 99.8% air content. (Aerogel)

9 A compound used in coloring house facades, papyrus, and statues. (Egyptian Indigo Dye)

10 It regulates the calcium and phosphorus levels in the blood. (Vitamin D)

Q8. Mention the roles of the following scientists:

1 Dalton

He made the first scientific theory about the atom.

2 Rutherford

He made the first model for the atom on an experimental base.

Q9. Write the chemical symbols for the following elements:

1 Carbon (C) 2 Sodium (Na) 3 Chlorine (Cl)
4 Zinc (Zn) 5 Potassium (K) 6 Silicon (Si)
7 Gold (Au) 8 Silver (Ag) 9 Copper (Cu)
10 Phosphors (P) 11 Lead (Pb) 12 Mercury (Hg)
13 Chromium (Cr)

Q10. Calculate the atomic number of:

1 An element at the end of the third period. (18)
2 An alkali element in the fourth period. (19)
3 An inert gas element in the first period. (2)
4 An alkaline Earth element in the third period. (12)
5 An element whose last energy level M has the same number of electrons as the energy level K. (12)
6 An element in the second period and group 5A. (7)
7 A divalent metal in the second period. (4)
8 A divalent non-metal in the second period. (8)
9 An element in the start of the second period. (3)

Q11. Compare between:

1 Protons, neutrons and electrons according to:

a. Type of charge b. Location c. Mass

Points of Comparison	Protons	Neutrons	Electrons
a. Type of Charge	Positive	Neutral	Negative
b. Location	In the nucleus	In the nucleus	Revolve around the nucleus
c. Mass	1 u	1 u	$\frac{1}{1836}$ u

2 $^{32}_{16}S$ and $^{40}_{20}Ca$ elements according to:

a. Name b. Atomic number c. Atomic mass

d. Number of protons e. Number of neutrons

f. Number of electrons

g. Number of energy levels occupied by electrons

Points of Comparison	$^{32}_{16}S$	$^{40}_{20}Ca$
a. Name	Sulphur	Calcium
b. Atomic Number	16	20
c. Atomic Mass	32	40
d. Number of Protons	16	20
e. Number of Neutrons	16	20
f. Number of Electrons	16	20
g. Number of Energy Levels Occupied by Electrons	3	4

3 The three isotopes of hydrogen according to:

a. Name of the isotope b. Symbol

c. Atomic mass d. Number of neutrons

Points of Comparison	The Three Isotopes of Hydrogen		
a. Name of the Isotope	Protium	Deuterium	Tritium
b. Symbol	$^{1}_{1}H$	$^{2}_{1}H$	$^{3}_{1}H$
c. Atomic Mass	1	2	3
d. Number of Neutrons	0	1	2

4 Mendeleev's periodic table and Moseley's periodic table according to: The scientific basis of classifying elements.

Point of Comparison	Mendeleev's Periodic Table	Moseley's Periodic Table
The scientific basis of classifying elements	Elements are arranged in an ascending order according to their atomic masses.	Elements are arranged in an ascending order according to their atomic numbers.

5 Group 1A and Group 7A according to:

a. Group name b. Its block

Points of Comparison	Group 1A	Group 7A
a. Group Name	Alkali metals	Halogens
b. Its Block	s-block	p-block

6 Group 2A and Group 0 according to:

a. Group name b. Its block

Points of Comparison	Group 2A	Group 0
a. Group Name	Alkaline Earth metals	Nobel gases
b. Its Block	s-block	p-block

Q12. Mention the difference between each of the following:

1 A mixture of sand with iron filings and a mixture of sugar in water, in terms of separation methods.

Point of Comparison	A mixture of sand with iron filings	A mixture of salt in water
Separation Method	Magnetic separation	Filtration

2 Oxygen molecule and water molecule, in terms of the type of molecules:

Point of Comparison	Oxygen Molecule	Water Molecule
Type of Molecules	Element molecule	Compound molecule

3 O_3 molecule and **C** molecule, in terms of:

a. Name b. Number of atoms that make up the molecule.

Points of Comparison	O_3	C
a. Name	Ozone molecule	Carbon molecule
b. Number of atoms that make up the molecule	Three atoms	One atom

4 Water and honey, in terms of viscosity

Point of Comparison	Water	Honey
Viscosity	Low	High

5 Cork and iron, in terms of density.

Point of Comparison	Cork	Iron
Density	Its density is lower than water, so it floats on water.	Its density is higher than water, so it sinks in water.

6 Toothpaste and lemon, in terms of their effect on litmus paper.

Point of Comparison	Toothpaste	Lemon
Effect on Litmus Paper	It turns litmus paper into blue.	It turns litmus paper into red.

7 Butter mold and aerogel plate, in terms of their melting point.

Point of Comparison	Butter Mold	Aerogel Plate
Melting Point	Low	High

Q13. Mention the scientific reason:

1 The nucleus of the atom is positively charged.

Because the nucleus contains positively charged protons and neutrally charged neutrons.

2 The atom is electrically neutral.

Because the number of positive protons inside its nucleus is equal to the number of negative electrons that revolve around the nucleus.

3 The mass of the atom is concentrated in its nucleus.

Because electrons have negligible mass compared to the mass of protons and neutrons inside the nucleus.

4 The symbol of sodium is **Na** not **S** as it is expected.

Because the symbol of sodium (**Na**) is derived from its Latin name (Natrium).

5 It is advised to reduce the use of lots of fertilizers.

Because the overuse of chemical fertilizers may harm humans, animals, and plants because it causes water and soil pollution.

6 The atomic mass is often greater than the atomic number.

Because the mass number equals the sum of protons and neutrons inside the atom, but the atomic number equals the number of protons only.

7 The atomic mass equals the atomic number in the hydrogen atom.

Because the nucleus of the hydrogen atom has no nucleus.

8 The atomic mass is double the atomic number in the $^{16}_{8}\mathbf{O}$ atom.

Because the number of protons equals the number of neutrons in the oxygen atom.

9 Energy level (L) is saturated with 8 electrons.

– Because the number of electrons in the first four energy levels can be calculated by the mathematical relation: $2n^2$.

Number of electrons in energy level (L) = $2n^2 = 2 \times (2)^2 = 8$ electrons

10 Level (M) is saturated with electrons first before level (N).

Because energy level (M) has energy lower than that of energy level (N).

11 Energy is different in the energy levels in which electrons are revolving.

Because the energy of the energy level increases as we move away from the nucleus.

12 The element isotopes have the same atomic number and different atomic masses.

Because the element isotopes have the same number of protons, but they are different in the number of neutrons.

13 Scientists had made many attempts for classifying elements.

To facilitate their study and to find a relationship between the elements and their chemical and physical properties.

14 Moseley rearranged elements in his table according to their atomic numbers.

Because Moseley discovered that the periodic properties of elements are related to their atomic numbers, not to their atomic masses, as Mendeleev believed.

15 Calcium ($_{20}$**Ca**) is a metal.

Because calcium ($_{20}$**Ca**) has less than 4 electrons in its last (outermost) energy level.

Electronic configuration of ($_{20}$**Ca**) is (2 , 8 , 8 , ②).

16 Chlorine ($_{17}$**Cl**) is a non-metal.

Because chlorine ($_{17}$**Cl**) has more than 4 electrons in its last (outermost) energy level.

Electronic configuration of ($_{17}$**Cl**) is (2 , 8 , ⑦).

17 Sodium ($_{11}$**Na**) is an element from alkali metals.

Because the last energy level of sodium contains one electron, which means it is located in group 1A, which is called the alkali metals group.

Electronic configuration of ($_{11}$**Na**) is (2 , 8 , ①).

18 Calcium ($_{20}$**Ca**) is an element from alkaline Earth metals.

Because the last energy level of calcium contains two electrons, which means it is located in group 2A, which is called the alkaline Earth metals group.

Electronic configuration of ($_{20}$**Ca**) is (2 , 8 , 8 , ②).

19 Fluorine ($_{9}$**F**) is an element from halogens.

Because the last energy level of fluorine contains seven electrons, which means it is located in group 7A, which is called the halogens group.

Electronic configuration of ($_{9}$**F**) is (2 , ⑦).

20 It is difficult to identify metalloids from their outermost energy level.

Because the number of electrons in their outermost energy levels is different.

21 The valency of noble gases is zero.

Because they have complete outermost energy levels, so they don't have individual electrons in Lewis structure.

22 The hydrogen molecule is considered an element molecule, while the sodium chloride molecule is a compound molecule.

Because hydrogen molecule (**H_2**) is composed of same atoms, while sodium chloride molecule (**NaCl**) is composed of different atoms.

23 Seawater is considered a homogeneous mixture.

Because the components of seawater can't be distinguished by the naked eye.

24 Wood floats on the surface of water, while iron sinks in it.

- Because the density of wood is lower than that of water, so it floats on water.
- Because the density of iron is higher than that of water, so it sinks in water.

25 Iron filings can be easily separated from flour.

Because they don't combine chemically together, so we can separate them easily by magnetic separation.

26 The nitric acid molecule is considered an inorganic compound molecule.

Because the nitric acid molecule (HNO_3) doesn't contain carbon or hydrogen atoms.

27 Helium gas is used to fill balloons.

Because helium gas is lighter than air and it is not flammable.

28 Nitrogen is used to fill car tires instead of air.

Because nitrogen is not affected by temperature and doesn't react with rubber.

29 Stainless steel alloy is used in the manufacture of cookware.

Because stainless steel alloy resists rusting.

30 Aircraft structures are made of aluminum and titanium alloy.

Because aluminum-titanium alloy is lighter than aluminum and retains strength at high temperatures.

31 Aerogel is used in making jackets for research scientists in Antarctica.

Because Aerogel has excellent insulating properties, so it is used instead of using polar bear fur, helping to protect them from extinction.

32 Vitamin D is considered one of the important vitamins for the human body.

Because Vitamin D regulates calcium and phosphorus levels in the blood to prevent osteoporosis.

Q14. What happens:

1 To the atomic radius when increasing the atomic number of elements of the same group from top to bottom?

The atomic radius of elements will increase.

2 To the atomic radius when increasing the atomic number of elements in one period from left to right?

The atomic radius of elements will decrease.

3 If the number of electrons in the last energy level is less than 4 electrons? (According to the type of element)

The type of element will be a metal.

4 If the number of electrons in the last energy level is greater than 4 electrons? (According to the type of element)

The type of element will be a non-metal.

5 If the number of electrons in the last energy level is complete with electrons? (According to the type of element)

The type of element will be a noble (inert) gas.

6 If the atomic radius increases?
(According to the boiling and melting points of alkali metals)

The melting and boiling points will decrease.

7 If the atomic radius increases?
(According to the boiling and melting points of halogens)

The melting and boiling points will increase.

8 To the acidified water if it is subjected to electrolysis?

Water will decompose into its components, which are hydrogen gas and oxygen gas.

9 If you heat red mercury oxide compound?

Red mercury oxide will decompose into its components, which are mercury (Hg) and oxygen gas (O_2).

10 If we dip a sunflower leaf in lemon juice?

Its color will turn into red.

11 If we put a piece of wood in water?

The wood piece will float on water.

12 If we manufacture iron cookware?

The cookware may rust.

13 If we use carbon dioxide gas to fill balloons?

The balloons won't rise in the air.

Q15. Answer the following question:

1. What are the building units for calcium carbonate material?

   Atoms.

2. What are the most important attempts to classify elements?

   a. Mendeleev's Periodic Table.

   b. Moseley's Periodic Table.

   c. Modern Periodic Table.

3. What is the scientific basis for classifying elements in Mendeleev's periodic table?

   Mendeleev arranged elements in an ascending order according to their atomic masses.

4. What is the scientific basis for classifying elements in Moseley's periodic table?

   Moseley arranged elements in an ascending order according to their atomic number.

5. What is the scientific basis for classifying elements in the Modern periodic table?

   Scientists arranged elements in an ascending order according to their atomic number and the way of filling the energy sublevels with electrons.

6. An element's atomic number is 11 and its atomic mass is 23. Find:

   a. The number of electrons

   b. The number of protons

   c. The number of neutrons

   a. The number of electrons = the atomic number = 11.

   b. The number of protons = the atomic number = 11.

   c. The number of neutrons = the mass number – the atomic number
   = 23 – 11 = 12.

7 An element has 13 protons and the number of its neutrons is more than the number of its protons by one Find:

a. The number of electrons
b. The number of nucleons
c. The electronic configuration
d . The number of electrons in the outermost energy level

a. The number of electrons = the number of protons = 13.
b. The number of nucleons = 13 + 14 = 27.
c. The electronic configuration is (2 , 8 , 3).
d. The number of electrons in the outermost energy level = 3 electrons.

8 An element H, its electrons are distributed in two energy levels, and the outermost energy level contains 4 electrons, and there are 6 neutrons in its nucleus.

a. Show by drawing the electronic configuration for this element.
b. Find its atomic mass.
c. Write the symbol of this element indicating the number of both A and z.

a. The electronic configuration is (2 , 4).
b. The atomic mass = the number of electrons + the number of neutrons = 6 + 6 = 12.
c. $^{12}_{6}C$.

9 The following figure shows some groups of the periodic table

From the previous table, complete the following sentences:

a. The elements of group (A) are known by alkali metals elements, while the elements of group (D) is known by nobel gases.
b. The valency of elements in group (B) is divalent, While the valency of elements in group (C) is monovalent.

10 The following figure represents third period:

A	B	C	D	E	F	G	H

Find:

a. The atomic number of the element H that is considered an inert gas.

The electronic configuration of element (H) is (2 , 8 , ⑧).

The atomic number = the number of electrons = 2 + 8 + 8 = 18

b. Which of the following elements is considered an alkali (A-B-D-G)?

A

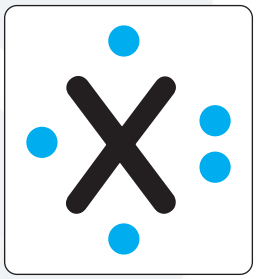
c. Which of the following elements is considered an alkali earth (A-B-D G)?

B

d. Which of the following elements is considered a halogen (A-B-D-G)?

G

11 From the opposite Lewis dot structure of element (X) located in period 3, find:



a. The atomic number for element.

The electronic configuration of element (X) is (2 , 8 , ⑤).

The atomic number = the number of electrons = 2 + 8 + 5 = 15

b. Valency for element.

Trivalent (because it has three unpaired electrons Lewis structure).

c. Type of element.

Non-metal (because it has more than four electrons in its last energy level).

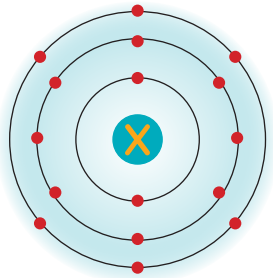
d. The atomic number that precedes it in the same period.

(14)

e. The atomic number that precedes it in the same group.

(7)

12 The following figure shows the electronic configuration of element (X). Determine:



a. The atomic number

The atomic number = 2 + 8 + 6 = 16

b. Place of element in the periodic table

The electronic configuration of element (X) is (2 , 8 , ⑥).

So element (X) is located in Period 3 and group 6A

c. Type of element

Non-metal (because it has more than four electrons in its last energy level).

d. Valency of element

Lewis structure of element (X) is :X:

Element (X) is Divalent (because it has two unpaired electrons Lewis structure).

13 The following table represents the elements of the second period:

Group number	1A	2A	3A	4A	5A	6A	7A	0
Lewis Formula	• Li	•Be•	• B •	• C •	: N •	: O :	: F :	:Ne:

Determine:

a. The valence of the element boron. (3)

b. The type of element lithium. (Alkali Metal)

c. A metal element with a valence of divalent. (Beryllium - Be)

d. A metalloid element. (Boron - B)

e. A halogen element. (Fluorine - F)

f. A non-metal element with a valence of divalent. (Oxygen - O)

g. An inert element. (Neon - Ne)

Unit 1 Lesson 4: Chemical Bonds

Q1 Choose the correct answer:

(Week 6 Test)

1 An atom of a/an ..... changes into a positive ion when it loses an electron.

a. metal b. non-metal c. inert gas d. halogen

2 An atom of ..... changes into a negative ion when it gains an electron.

a. alkaline Earth metals b. alkali

c. inert gases d. halogens

3 The number of electrons in the potassium ion ($_{19}K$) is ..... electrons.

a. 8 b. 18 c. 19 d. 20

4 The number of electrons in the outermost energy level of an oxygen ion ($_{8}O$) is ..... electrons.

a. 8 b. 6 c. 4 d. 10

5 The number of energy levels in a sulfur ion ($_{16}S$) is ..... the energy levels in its atom.

a. greater than b. less than c. equal to d. twice

6 The bond formed between an alkali element and a halogen element is a/an..... bond.

a. single covalent b. double covalent

c. triple covalent d. ionic

7 The bond that forms between two atoms of halogens elements is a/an ..... bond.

a. single covalent b. double covalent

c. triple covalent d. ionic

8 The closest inert gas to the element ($_{20}Ca$) is ..... .

a. Helium b. Neon c. Argon d. Krypton

9 What is the molecular formula of a compound resulting from the combination of an element (X) from alkali metals with an element from halogens (Y)?

a. YX_2 b. YX c. X_2Y d. XY

10 The element whose atomic number is 17 forms a covalent bond with the element whose atomic number is ..... .

a. 1 b. 11 c. 12 d. 13

11 An atom of element (A) from the fifth group is linked to three hydrogen atoms to form a compound with the formula ..... and the bond in the molecules is a ..... .

a. AH – single covalent
b. HA_3 – triple covalent
c. HA – single covalent
d. AH_3 – triple covalent

12 The number of bonds in a methane molecule is ..... single covalent bond(s).

a. one b. two c. three d. four

13 Which of the following represents an ionic bond?

a b c d

14 An atom of element (X) binds to two hydrogen atoms, as shown in the opposite figure.

What type of bonding occurs in this molecule, and what is the group number of element (X) in the periodic table?

a. Ionic – Group 6A
b. Ionic – Group 2A
c. Covalent – Group 6A
d. Covalent – Group 2A

15 What is the symbol of the ion whose nucleus contains 27 nucleons, including 14 neutrons?

a. Si^{+4} b. Al^{+3} c. Mg^{+2} d. Na^{+1}

16 An element from alkaline Earth metals forms an ionic bond with an element in group ..... .

a. 5A b. 6A c. 7A d. 0

17 The number of energy levels in a hydrogen ion is ..... the number of its atom.

a. greater than b. less than c. equal to d. twice

18 When an atom turns into a positive ion, the number of electrons ..... .

a. decreases
b. increases
c. remains the same
d. doubles

Q2 Correct the underlined part in the following sentences:

(Week 6 Test)

1. The ionic bond occurs between non-metals and non-metals.
(metals and non-metals)
2. The covalent bond occurs between two metals.
(two non-metals)
3. The bond in the potassium chloride molecule is covalent.
(ionic)
4. The bond between the elements of the sixth group and the elements of the seventh group is ionic. (covalent)
5. The bond in the sodium molecule is double covalent. (oxygen molecule)
6. The bond between carbon and oxygen in the methane molecule is a single covalent bond. (hydrogen)
7. The outermost level in the nitrogen ion (7N) contains 5 electrons.
(8 electrons)
8. The closest inert gas to the sodium atom (11Na) is helium. (neon)

Q3 Write the scientific term:

(Week 6 Test)

1. It is a metal atom that has lost one electron or more.
(Positive ion (Cation))
2. It is a non-metallic atom that has gained one electron or more.
(Negative ion (Anion))
3. It is a bond that results from electrical attraction between a positive ion and a negative ion. (Ionic bond)
4. They are compounds that dissolve in water and conduct electricity.
(Ionic compounds)
5. They are compounds that poor electrical conductors.
(Covalent compounds)
6. It is a bond that forms between two atoms of different non-metallic elements or between two similar atoms of a non-metallic element.
(Covalent bond)
7. It is a bond that results from two atoms sharing one pair of electrons, with each atom contributing one electron. (Single covalent bond)

8 It is a bond that results from each atom sharing two electrons.
(Double covalent bond)

9 It is a bond that results from each atom sharing three electrons.
(Triple covalent bond)

10 It is the simplest molecule of an organic compound in which a carbon atom is bonded to four hydrogen atoms. (Methane molecule)

Q4. Complete the following sentences:

(Week 6 C.W)

1 The molecules of materials are different in their type and number of atoms and the way they are linked together.

2 The difference in the bonding of atoms with each other leads to the difference in the physical and chemical properties of the molecules of the resulting compound.

3 Types of chemical bonding are ionic bonding and covalent bonding.

4 An atom becomes a positive ion when losing electrons.

5 An atom changes into a negative ion when it gains one or more electrons.

6 The ionic bond arises due to the electrostatic attraction between a positive ion and a negative ion.

7 The closest inert gas to sodium is neon, while the closest inert gas to chlorine is argon.

8 The chlorine atom is bonded to the sodium atom by an ionic bond.

9 The number of energy levels in a sodium atom is more than the number of energy levels in its ion.

10 The number of energy levels in a chlorine atom is equal to the number of energy levels in its ion.

11 A covalent bonding arises from two atoms of the same non-metallic element or between two non-metallic atoms of two different elements.

12 The bond in the hydrogen molecule is a single covalent bond, while the bond in the nitrogen molecule is a triple covalent bond.

13 The bond in the hydrogen chloride molecule is a single covalent bond, while the bond in the sodium chloride molecule is an ionic bond.

14 The melting point of ionic compounds is high, while the melting point of covalent compounds is low.

15 When an aluminum atom ($_{13}$Al) is converted into a positive ion, the number of electrons in its ion is 10 electrons.

Q5 What is meant by each of the following:

(Week 6 H.W)

1 Positive ion

It is a metal atom that lost one or more electrons in the chemical reaction.

2 Negative ion

It is a non-metal atom that has gained one or more electrons in the chemical reaction.

3 Ionic bond

It is the electrostatic attraction between a positive ion (cation) and a negative ion (anion), forming an ionic compound molecule.

4 Covalent bond

It is the bond that occurs between two atoms of the same non-metal elements or between two atoms of different non-metal elements by sharing electrons.

5 Single covalent bond

It is the bond that occurs between two atoms of the same non-metal element or between two atoms of different non-metal elements by sharing their valence electrons.

Q6 Give one example for each of the following:

(Week 6 Test)

1 The simplest molecule of an organic compound. (Methane (CH_4))

2 A molecule containing a single covalent bond. (Hydrogen molecule (H_2))

3 A molecule containing a double covalent bond. (Oxygen molecule (O_2))

4 A molecule that contains a triple covalent bond. (Nitrogen molecule (N_2))

5 A molecule that contains an ionic bond. (Sodium chloride (NaCl))

Q7 Compare between:

(Week 6 H.W)

1 Positive ion and negative ion in terms of:

P.O.C	Positive Ion	Negative Ion
Definition	It is a metal atom that has lost one or more electrons.	It is a non-metal atom that has gained one or more electrons.
Number of Electrons and Protons	The number of electrons is less than the number of protons.	The number of electrons is greater than the number of protons.
Number of Energy Levels	The number of its energy levels is less than the number of energy levels in its atom.	The number of its energy levels is equal to the number of energy levels in its atom.

2 Ionic compounds and covalent compounds in terms of:

P.O.C	Ionic Compounds	Covalent Compounds
Solubility in Water	Dissolve in water	Do not dissolve in water
Melting Point	High	Low
Boiling point	High	Low
Electrical Conductivity	Conduct electricity	Don't conduct electricity

Q8 Give reasons for:

(Week 6 H.W)

1 The bond in the sodium chloride molecule is ionic.

Because an electrostatic attraction occurs between the positive ion of sodium and the negative ion of chlorine, forming an ionic compound called sodium chloride (NaCl).

2 The bond in a hydrogen chloride molecule is single covalent. (Week 6 H.W)

Because the hydrogen atom shares its valence electron and the chlorine atom shares its valence electron to form one single covalent bond.

3 The bond in the water molecule is a single covalent.

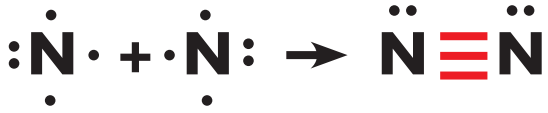
Because the oxygen atom shares its two unpaired valence electrons, while each hydrogen atom shares its valence electron to form a single covalent bond between each hydrogen and oxygen atom.

4 The bond in the oxygen molecule is a double covalent bond.

Because each oxygen atom shares its two unpaired valence electrons to form a double covalent bond.

5 The bond in the nitrogen molecule is a triple covalent bond.

Because each nitrogen atom shares its three unpaired valence electrons to form a triple covalent bond.



6 When a metal loses an electron, it turns into a positive ion.

Because the number of positive protons becomes greater than the number of negative electrons in its ion.

7 When a halogen gains an electron, it turns into a negative ion.

Because the number of negative electrons becomes greater than the number of positive electrons in the ion of halogen.

8 A bond can form between two chlorine atoms, but a bond cannot form between two sodium atoms.

Because each chlorine atom shares its valence electron to form one single covalent bond and produce a covalent compound, while the sodium atom is a metal that tends to lose its outermost electrons during the chemical reactions.

9 Ionic compounds are neutral in charge.

Because the number of positive charges is equal to the number of negative charges in the ionic compound.

Q9 What happens if:

(Week 6 Test)

1 A chlorine atom bonds with a sodium atom?

An ionic compound called sodium chloride (NaCl) is formed by an ionic bond.

2 A chlorine atom bonds with a hydrogen atom?

A covalent compound called hydrogen chloride (HCl) is formed by a single covalent bond.

3 Two chlorine atoms bond together?

A covalent element called chlorine molecule (Cl_2) is formed by a single covalent bond.

4 Two hydrogen atoms bond with an oxygen atom?

A covalent compound called water (H_2O) is formed by two single covalent bonds.

5 Two oxygen atoms bond together? (Week 6 Test)

A covalent element called oxygen molecule (O_2) is formed by a double covalent bond.

6 Two nitrogen atoms bond together? (Week 6 Test)

A covalent element called nitrogen molecule (N_2) is formed by a triple covalent bond.

7 A carbon atom bonds to four hydrogen atoms? (Week 6 Test)

A covalent compound called methane (CH_4) is formed by four single covalent bonds.

Unit 2 Lesson 1: Electric Forces

Q1 Choose the correct answer:

(Week 7 H.W)

1 A positive electric charge is formed at the rod that is made of ..... when we rub it with a piece of silk.

a. glass b. ebonite c. copper d. cotton

2 When we rub a rod of ebonite with silk, ... are transferred from the silk to the ebonite.

a. protons b. electrons c. neutrons d. atoms

3 A rod made of ..... can be charged with a static charge when rubbed with a suitable material, provided that the hand-held part is insulated.

a. iron b. glass c. ebonite d. plastic

4 The electrostatic series is the arrangement of some materials according to the ease of losing ..... from them.

a. protons b. electrons c. neutrons d. molecules

5 A/An ..... is used to protect constructions and buildings from lightning strikes.

a. Coulomb meter b. electroscope
c. lightning rod d. voltmeter

6 The ..... device is used to indicate the electrical state of the body.

a. Hoffman voltmeter b. electroscope
c. lightning rod d. voltmeter

7 The weak electric charge is measured by the ..... device.

a. Coulomb meter b. lightning rod
c. electroscope d. voltmeter

Q2 Write the scientific term:

(Week 7 H.W)

1 It is composed of electrical charges accumulated on the surfaces of objects when electrons are lost or gained. (Static electricity)

2 It is an arrangement of some materials according to how easily they lose electrons. (Electrostatic series)

3 It is the device used to measure weak electric charges. (Coulomb meter)

4 It is a system used to protect buildings and constructions from lightning strikes. (Lightning rod)

5 It is the area surrounding the electric charges where their effect appears without contact. (Electric field)

6 They are imaginary lines showing the path taken by a small, freely moving positive charge placed in it. (Electric field lines)

7 It is a device used to determine the type of electric charge. (Electroscope)

Q3 Complete the following sentences:

(Week 7 H.W)

1 When rubbing an ebonite rod with a piece of wool, the ebonite rod acquires negative electric charges, while the piece of wool acquires positive electric charges.

2 Different electric charges attract, while similar electrical charges repel.

3 The electric charges accumulated on the surfaces of objects are known as static electricity.

4 Objects that can be charged with a static electric charge can be made of non-conductive materials, such as ebonite and wood.

5 The electrostatic series is the arrangement of some materials according to their easiness of losing electrons.

6 From the rubbing electrostatic materials are silk, wool, and cotton.

7 Weak electrical charges are measured by Coulomb meter.

8 During metal plating by electrostatic plating, the required painted object is charged with negative electric charges, while the spray paint is charged with positive electric charges.

9 Lightning rod is a system used to protect buildings and constructions from lightning strikes.

10 Electric power lines start from the positive charge and end at the negative charge.

11 Electric force lines are imaginary lines that do not intersect with each other.

12 The electric force lines end at the surface of charged metal objects and do not penetrate them.

13 The electroscope device is known as electrical detector.

14 The electroscope is used to detect the presence of a charge on a body and determine its type.

Q4 What is meant by:

(Week 7 H.W)

1 Static electricity

It is composed of charges that accumulate on the surface of objects when they lose or gain electrons.

2 Electrostatic series

It is the arrangement of materials according to the ease of losing electrons when rubbed together.

3 Electric field

It is the region of space around an electric charge in which its effect appears.

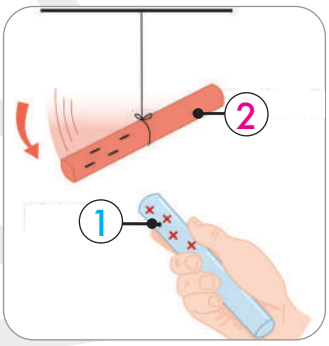
4 Electric field lines

They are imaginary lines that show the path taken by a small free-moving positive charges that are placed in the electric field.

Q5 Answer the following questions:

(Week 7 H.W)

Q1. Look at the following figure and answer the questions below:



1 What is the name of rod (1)?

Glass rod

2 What is the type of charges of rod (1)?

Positive charges

3 What is the name of rod (2)?

Ebonite rod

4 What is the type of charges of rod (2)?

Negative charges

5 What happens when the two rods are brought closer together?

The free moving ebonite rod is attracted to the fixed glass rod.

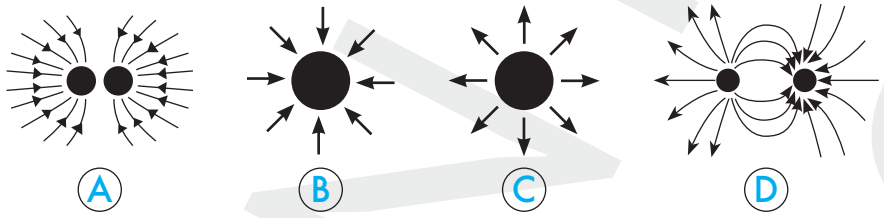
6 What happens when the second rod is replaced with another rod of the same type as the first rod and with the same charge?

The free moving ebonite rod is repelled from the fixed ebonite rod.

7 What happens when the second rod is replaced with another rod of the same type as the first rod and not charged?

The free moving ebonite rod will not move.

Q2. The following figures represent electric force lines:



Complete the following sentences:

1 Figure (A) represents the electric force lines for two similar charges.

2 Figure (B) represents the electric force lines for a negative charge.

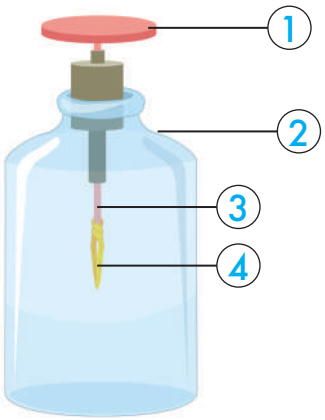
3 Figure (C) represents the electric force lines for a positive charge.

4 Figure (D) represents the electric force lines for two different charges

Q3. What is the type of the formed charge on each piece of artificial leather and a wooden rod when rubbed together? With explanation.

- The wooden rod acquires a positive charge because wood is located at a higher position in the electrostatic series.
- The piece of artificial leather acquires a negative charge because leather is located at a lower position in the electrostatic series.

Q4. The opposite figure represents one of the devices.
Answer the following questions:



1 What is the name of the device?

Electroscope

2 What is it used for?

① It detects the electric state of an object.

② It determines the type of charge on a charged object.

③ It compares the magnitude of charges on different charged objects.

3 Write the labels in the opposite drawing

① Copper disc ② Glass bottle ③ Copper rod

④ Two gold leaves

Q6 Give reasons for: (Week 7 H.W)

1 The electrostatic electricity is called static electricity.

Because the electric charges accumulate on the surface of the surface due to gaineing or losing electrons.

2 Small paper scraps are attracted to the ebonite rod when rubbed with silk.

Because rubbing ebonite rod with silk gives it the ability to attract lightweight objects, such as paper scraps.

3 Small paper scraps are not attracted to the copper rod when rubbed with wool.

Because rubbing a non-insulated copper rod with silk doesn't give it the ability to attract lightweight objects, such as paper scraps.

4 Metal chains are hanged from fuel transport vehicles and touch the ground.

To discharge the electric charges generated by the friction of the fuel with the surface of the fuel tank to prevent fuel combustion.

5 The glass rod becomes positively charged when rubbed with silk.

Because glass precedes silk in the electrostatic series.

6 It is preferable to paint metals using the electrostatic painting method than other methods.

To reduce the paint waste and to ensure an even layer of paint.

7 Lightning rods are used in buildings and constructions.

To protect buildings and structures from lightening.

Q7 What happens if:

(Week 7 H.W)

1 We rub the ebonite rod with a piece of silk and bring them close to each other?

They will be attracted to each other because they have opposite charges.

2 We hang a rod of ebonite after rubbing it with silk and bring a rod of glass close to it after rubbing it with silk?

They will be attracted to each other because they have opposite charges.

3 We touch a charged flashlight disc with your hand?

We feel a slight electric shock because the electric charges are discharged.

4 We approach a positively charged glass rod close to a negatively charged electroscope?

The divergence of the two gold leaves decreases.

5 We approach a negatively charged ebonite rod close to an negatively charged electroscope?

The divergence of the two gold leaves increases.

Unit 2 Lesson 2: Magnetic Forces

Q1 Choose the correct answer:

(Week 8 Tests)

1 All the following are forms of artificial magnets, except ..... .

a. a magnetic needle
b. a bar magnet
c. a horseshoe
d. an aluminum piece

2 ..... is from magnetic materials.

a. Gold
b. Silver
c. Copper
d. Cobalt

3 ..... is from non-magnetic materials.

a. Iron
b. Nickel
c. Aluminum
d. Cobalt

4 A/An ..... is an ancient tool used to determine directions.

a. compass
b. hourglass
c. sundials
d. balance

5 The strength of the magnet increases in the..... of the magnet.

a. middle
b. edge
c. side
d. surface

6 The magnetic field lines crowd together at the ..... .

a. north pole only
b. north and south Poles
c. magnet tip
d. south pole only

7 The magnetic field lines are directed from the ..... to the ..... outside the magnet.

a. north pole – south pole
b. south pole – north pole
c. middle of the magnet – edge
d. edge of the magnet – middle

Q2 Write the scientific term:

(Week 8 H.W)

1 It is a natural stone that has the ability to attract objects made of iron. (Lodestone)

2 They are materials that are not attracted to the magnet. (Non-magnetic materials)

3 They are materials that are attracted to the magnet. (Magnetic materials)

4 It is an ancient tool used to determine the four geographical directions. (Compass)

5 Similar poles repel and different poles attract.
(Law of Attraction and Repulsion)

6 It is the area surrounding the magnet where the effects of its magnetic force appears. (Magnetic field)

7 They are imaginary lines representing the strength of the magnetic field.
(Magnetic field lines)

Q3 Complete the following sentences:

(Week 8 Tests)

1 From the forms of industrial magnets are bar magnets, magnetic needles, and magnetic rings.

2 A magnet has two poles, which are north pole and south pole.

3 The force of attraction of a magnet is greatest at the two poles and decreases when approaching to the middle.

4 The compass box is made of copper or plastic.

5 The compass is a freely moving needle magnet fixed at its pivot.

6 When a magnet is suspended freely, it takes the direction of the north pole of Earth and the south pole of Earth.

7 The north magnetic pole is represented by the symbol N, while the south magnetic pole is represented by the symbol S.

8 When a magnet is divided into several parts, each part becomes a new magnet with two poles.

9 Similar magnetic poles repel each other, while different poles attract each other.

10 Magnetic field lines start from the north pole and end at the south pole outside the magnet.

Q4 What is meant by:

(Week 8 Tests)

1 Magnetic materials

They are materials which are attracted to the magnet.

2 Non-magnetic materials

They are materials which are not attracted to the magnet.

3 Law of Attraction and Repulsion

– Like (similar) magnetic poles repel each other.

– Unlike (different) magnetic poles attract each other.

4 Magnetic field

It is the region of space around a magnet where the effect of its magnetic force appears.

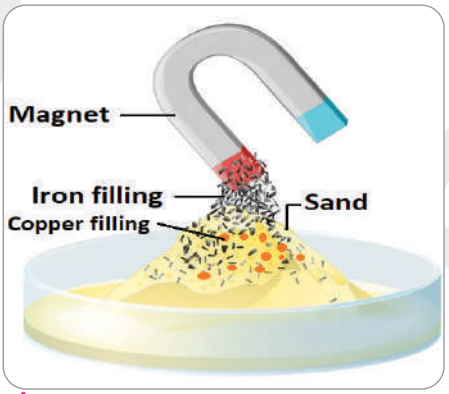
5 Magnetic field lines

They are imaginary lines that represent the force of the magnetic field.

Q5 Answer the following questions:

Q1. Study the following figure and answer the questions below:

(Week 8 C.W)



1 What is the type of the mixture?

Heterogeneous mixture

2 How can the mixture be separated?

By magnetic attraction, the magnet will attract the iron filings only.

3 Why is the copper not attracted to the magnet?

Because copper is a non-magnetic material.

4 Why are the iron filings attracted to the magnet?

Because iron is a magnetic material.

Q2. Classify these materials according to their attraction to the magnet:

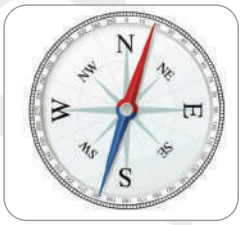
(Week 8 C.W)

Silver – Iron – Gold – Copper – Aluminum – Steel – Nickel

– Magnetic materials that are attracted to magnets: Iron – Steel – Nickel

– Non-magnetic materials that are not attracted to magnets: Silver – Copper – Aluminum – Gold

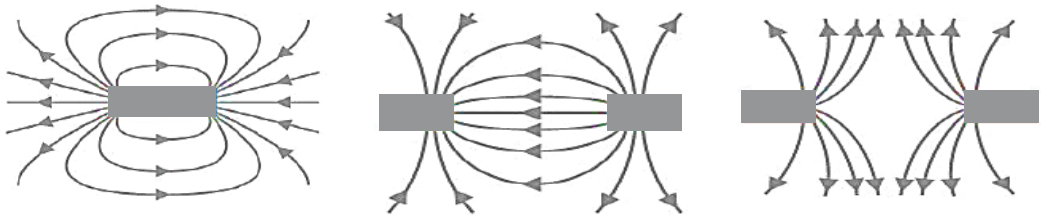
Q3. Complete: (Week 7 C.W)



1 The opposite figure represents the compass.

2 It is used in determining the Earth's four main geographical directions.

Q4: The following figures represent magnetic field lines: (Week 8 C.W)



A B C

Which one represents?

1 Magnetic field lines between two different magnetic poles. (B)

2 Magnetic field lines between two similar magnetic poles. (C)

3 Magnetic field lines of two poles of the same magnet. (A)

Q6 Give reasons for: (Week 8 Tests)

1 Nickel and cobalt are considered magnetic materials.

Because nickel and cobalt are attracted to the magnet.

2 Aluminum and silver are non-magnetic materials.

Because aluminum and silver are not attracted to the magnet.

3 A compass box is made of copper or plastic and not of iron.

To prevent the attraction between the magnetic needle and iron which can affect its movement.

4 Iron filings are attracted in large amounts at each pole of the magnet.

Because the attraction force of the magnet is the strongest at its poles, and it decreases as it gets closer to the middle of the magnet.

Q7 What happens if:

(Week 8 H.W)

1. A magnet is brought close to a mixture of iron filings and silver turnings?

   Only iron fillings are attracted to the magnet.

2. We dip a magnet in a box containing iron filings?

   The iron fillings are attracted to the magnet (with a high density of filings at the poles and decreases at the middle of the magnet).

3. A magnet is suspended freely from its middle?

   It always takes a certain direction (North-South direction).

4. We divide a single magnet into several parts?

   Each part of them forms a new magnet with two poles.

5. We bring the south pole of a magnet closer to the south pole of another freely suspended magnet?

   The freely suspended magnet moves away (repels) from the other magnet.

6. We bring the south pole of a magnet closer to the north pole of another freely suspended magnet?

   The freely suspended magnet moves towards (attracts) the other magnet.

Unit 2 Lesson 3: Gravitational Forces

Q1 Choose the correct answer:

(Week 7 Test)

1 ..... forces affect certain dimension, such as gravitational forces and magnetic forces.

a. Flexibility b. Collision c. Friction d. Field

2 ..... discovered that all material objects attract each other.

a. Rutherford b. Newton c. Coulomb d. Moseley

3 ..... is an example of contact forces.

a. Gravity b. Magnetic c. Friction d. Electrostatic

4 ..... is an example of field forces.

a. Gravity b. Contact c. Friction d. Flexibility

5 Earth's lines of gravitational forces are represented by..... lines.

a. magnetic field b. electric field

c. gravitational field d. length

6 From the factors affecting the gravitational force between two objects is the ..... .

a. volume of both objects b. type of material of both objects

c. mass of both objects d. density of both objects

7 The phenomenon of tides occurs ..... daily.

a. once b. twice c. three times d. four times

8 Tides are most active when the moon is shaped like a ..... .

a. full moon b. crescent c. first quarter d. last quarter

9 If an object has a mass of 5 kg, its weight on Earth's surface equals ..... .

a. 5 N b. 50 N c. 40 N d. 50 kg

10 If the weight of an object on the Earth's surface equals 60 newtons, its mass equals ..... .

a. 60 kg b. 6 kg c. 6 N d. 40 kg

11 The intensity of the gravitational field on the moon is equal to ..... the intensity of the gravitational field on the Earth.

a. ½ b. ¼ c. 1/6 d. 1/8

12 The ratio between the weight of an object at the base of a mountain to its weight at its top is ..... one.

a. greater than b. less than c. equal to d. double

Q2 Complete the following sentences:

(Week 9 H.W)

1 The force affecting an apple falling to the ground is the gravity force.

2 Contact forces are those that act on objects upon contact, such as collision force, friction force, and elasticity force.

3 Earth's gravitational force is expressed by lines of Earth's gravitational lines.

4 The greater the mass of the two objects, the higher the force of attraction between them.

5 The greater the distance between the two objects, the lower the gravitational force between them.

6 The phenomenon of tides occurs in the Bay of Fundy in Canada, and the difference between the high and low water levels can reach up to 19 meters.

7 The phenomenon of tides is used to purify the bodies of water from impurities.

8 The phenomenon of tides can be used in generating electricity as one of the renewable energy sources.

9 Black holes are formed when a massive star collapses at the end of its life.

10 Black holes are characterized by an immense gravity force, so that light can't escape from them

11 Orbital motion is the revolution of any object in space along a curved path around a central object.

12 The moon's movement around the Earth, the movement of the Earth around the Sun, and the movement of satellites around the Earth are examples of orbital motion.

13 The rotation of electrons around the nucleus of an atom is an example of orbital motion.

14 The gravitational field strength on the Earth's surface decreases as we move farther from its center.

15 The weight of an object changes from one planet to another.

16 A spring balance is used to measure the weights of objects.

17 The measuring unit of weight is newton, while the measuring unit of mass is kilogram.

18 Weight = Mass X Gravitational field intensity

19 If the mass of an object is 500 g, then its weight is 5 newtons.
(Knowing that the gravitational field strength on the Earth's surface is 10 N/kg.)

20 If an object weighs 50 newtons, its mass on the moon's surface equals 5 kg.
(Knowing that the gravitational field strength on the Earth's surface is 10 N/kg.)

Q3 What is meant by:

(Week 9 Test)

1 Earth's gravitational force

It is the force that pulls (attracts) all objects downward towards the Earth's center.

2 Contact forces

They are the forces that act on certain objects when they touch each other.

3 Field forces

They are the forces that act on objects over a certain distance without touching.

4 Orbital motion

It is the revolution of any object in space around another central body in a curved path due to the gravitational attraction force between them.

5 Object's mass

It is the amount of matter an object contains.

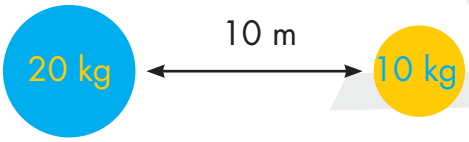
6 Object's weight

It is the gravitational force that Earth exerts on an object.

Q4 Answer the following questions:

(Week 9 C.W)

Q1. The following figure represents two bodies of the same material:



1 Does either body attract the other with greater force? And why?

No, because gravitational force is a mutual force acts on both objects by equal magnitude, but in opposite directions.

2 What happens to the gravitational force if the mass of both bodies becomes 20 kg?

The gravitational force between the two objects will increase.

3 What happens to the gravitational force if the distance between the centers of both bodies equals 20 meters?

The gravitational force between the two objects will decrease.

Q2. The following figures represent a body made up of the same material placed in three different places:

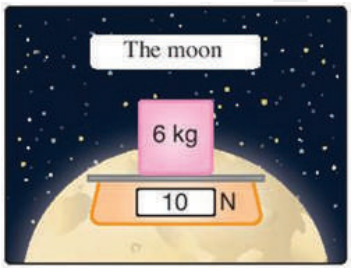


Figure A

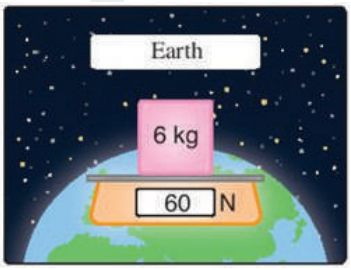


Figure B

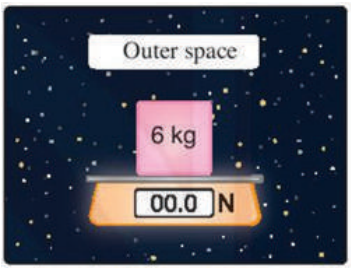


Figure C

1 Which of these places is the Earth, which is the space, and which is the moon?

Figure (B) represents the Earth, figure (A) represents the moon, and figure (C) represents the space.

2 Why does the body weight vary from a place to another?

Because the weight changes due to the difference in the gravitational field from a place to another.

Q3. The opposite figure represents two eggs. One of them is an ostrich egg and the other is a chicken egg. Which has the heaviest weight in outer space? And why?

Both of them have no weight in the outer space due to the absence of gravitational force.

Q5 Give reasons for:

(Week 9 Test)

1. All objects fall downward to the Earth's center.

   Due to the gravity force that pulls (attracts) all objects downward towards the Earth's center.

2. There is a field of magnetic force and no field of collision force.

   Because magnetic force acts on objects over a certain distance without touching, while collision force acts on certain objects when they touch each other.

3. The gravitational force between two objects increases when their masses increase.

   Because the mutual gravitational attraction force between two objects is directly proportional to the masses of the two objects.

4. The weight of an object on the Earth's surface is greater than the weight of the same object on the Moon's surface.

   Because the gravitational field of the moon is $\frac{1}{6}$ the Earth's gravitational field.

5. An object's weight changes from one planet to another.

   Because the weight changes due to the difference in the gravitational field from one place to another.

6. An object has no weight in the outer space.

   Due to the absence of gravitational force in the outer space.

Q6 What happens if:

(Week 9 H.W)

1. Gravity is absent?

   The objects become weightless, so they will float in the outer space.

2. Objects' masses increase relative to the gravitational force between them?

   The mutual gravitational force between the two objects increases.

3. The distance between two objects decreases relative to the gravitational force between them?

   The mutual gravitational force between the two objects increases.

4. An object is transferred from the moon's surface to the Earth's surface relative to its mass?

   The mass of the object doesn't change.

5. An object is transferred from the moon's surface to the Earth's surface relative to its weight?

   The weight of the object increases.

Unit 3 Lesson 1: Cells and Life

Q1 Choose the correct answer:

1 The building unit of a living organism is the ..... .

a. matter b. cell c. atom d. tissue

2 A group of different tissues can form a/an ..... .

a. organ b. system c. organism d. tissue

3 A group of organs form a/an ..... .

a. organ b. system c. tissue d. organism

4 ..... are multicellular organisms.

a. Bacteria b. Paramecia

c. Amoebae d. Mushroom fungi

5 Unicellular organisms include all the following organisms, except ..... .

a. bacteria b. paramecia

c. amoebae d. mushroom fungi

6 Euglena is a ..... organism.

a. protozoa b. prokaryotes c. unicellular d. multicellular

7 Mushroom fungus is a ..... organism.

a. protozoa b. prokaryotes c. unicellular d. multicellular

8 Unicellular organisms ..... .

a. consist of many cells

b. have cells specialized in their functions

c. are microscopic organisms that aren't visible to the naked eye

d. are large organisms that are visible to the naked eye

9 All the following are characteristics of birds, except that ..... .

a. they are multicellular organisms

b. their cells are specialized in their functions

c. they are microscopic organisms that can't be seen by the naked eye

d. they are large organisms that can be seen by the naked eye

10 All the following are found in the cell of a bird's body, except the ..... .

a. cell wall
b. nucleus
c. Golgi apparatus
d. centrosome

11 All the following are found in the cells of a bean plant, except the ..... .

a. cell wall
b. nucleus
c. Golgi apparatus
d. centrosome

12 All the following are found in bacterial cells, except the ..... .

a. cell wall
b. cytoplasm
c. Golgi apparatus
d. plasmamembrane

Q2 Write the scientific term:

1 They are the building units of a living organism. (Cells)

2 It is a group of similar cells that work together and perform one function. (Tissue)

3 It is a group of different tissues that work together and perform one function. (Organ)

4 It is a group of different organs that work together. (System)

5 It is the arrangement of living organisms into groups according to their similarities and differences to ease their study and identification. (Classification)

6 They are undifferentiated cells that have the ability to transform into all differentiated cells of the body. (Stem cells)

7 They are simple organisms whose bodies consist of a single, unspecialized cell. (Unicellular organisms)

8 They are complex organisms consisting of many cells that are distinguished and specialized in their work. (Multicellular organisms)

Q3 Complete the following sentences:

1. The building unit of a living organism is the cell.
2. The human body consists of a group of systems.
3. Each organ consists of a group of tissues.
4. Classification is the arrangement of living organisms based on the similarities and differences for the ease of their study.
5. Living organisms are classified according to number of cells and type of nucleus.
6. Eukaryotes are divided into unicellular organisms and multicellular organisms.
7. Unicellular organisms include amoeba, euglena, and yeast fungus.
8. Multicellular organisms include animals and plants.
9. Stem cells can transform into many different types of cells.
10. Stem cells are characterized by several properties, including their ability to be renewed through division and their ability to produce specialized cells.
11. Studying stem cells helps to enhance understanding of the way diseases occur, produce healthy cells to replace infected ones, and test new drugs before their use to determine their safety.

Q4 Cross out the odd word, then mention what connects the rest of the words:

1. Bacteria – Euglena – Paramecium – Amoeba (Bacteria)
   All the others are eukaryotic organisms.
2. Yeast fungus – Mushroom fungus – Bread mold fungus – Penicillium fungus (Yeast fungus)
   All the others are multicellular organisms.
3. Corn – Birds – Worms – Bacteria (Bacteria)
   All the others are eukaryotes.
4. System – Cell – Rabbit – Organ (Rabbit)
   All the others are structure units in humans.

5 Cell wall – Chloroplast – Centrosome – Golgi apparatus (Centrosome)

All the others are structures of plants cells.

6 Cell membrane – Chloroplast – Centrosome – Golgi apparatus (Chloroplast)

All the others are structures of animals cells.

7 Cell wall – Do not contain a true nucleus – Plasma membrane – Mitochondria (Mitochondria)

All the others are characteristics of prokaryotic cells.

8 White blood cells – Red blood cells – Stem cells – Nerve cells

All the others are differentiated cells.

Q5 Compare between:

1 Prokaryotes and eukaryotes, in terms of:

Definition – Characteristics

P.O.C	Prokaryotes	Eukaryotes
Definition	They are unicellular organisms that don't contain a true nucleus.	They are unicellular organisms or multicellular organisms that contain a true nucleus.
Characteristics	1 They are simple in structure. 2 They are relatively small in size. 3 Many cell organelles are missing.	1 They are complex in structure. 2 They are relatively large in size. 3 They contain many cell organelles.

2 Animal cells, plant cells, and bacterial cells, in terms of:

Cell wall - Plasma membrane - Centrosome - Chloroplasts - Golgi apparatus - Vacuoles

P.O.C	Animal Cells	Plant Cells	Bacterial Cells
Cell Wall	✗	✓	✓
Plasma Membrane	✓	✓	✓
Centrosome	✓	✗	✗
Chloroplasts	✗	✓	✗
Golgi Apparatus	✓	✓	✗
Vacuoles	✓	✓	✗

Q6 What is meant by:

1 Prokaryotes:

They are unicellular organisms that don't contain a true nucleus.

2 Eukaryotes:

They are unicellular organisms or multicellular organisms that contain a true nucleus.

3 Classification:

It is the arrangement of living organisms into groups according to the similarities and differences between them.

4 Cell:

It is the basic building unit of structure and function in all living organisms.

5 Tissue:

It is a group of cells.

6 Organ:

It is a group of tissues.

7 Unicellular organisms:

They are living organisms whose bodies consist of a single cell.

8 Multicellular organisms:

They are living organisms whose bodies consist of more than one cell.

9 Stem cells:

They are undifferentiated cells that have the ability to be transformed and differentiated into all the differentiated cells to perform a specialized function.

Q7 Give reasons for:

1 Living organisms are classified according to their similarities and differences.

To facilitate their study.

2 Prokaryotes can't be stem cells.

Because stem cells are special types of cells in higher animals and humans.

3 Paramecia and euglena are considered unicellular organisms.

Because their bodies consist of a single cell.

4 Bacteria are considered unicellular living organisms.

Because their bodies consist of a single cell.

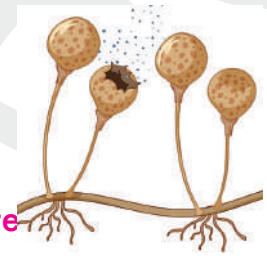
5 Bacteria differ from euglena, although they are both unicellular organisms.

Because bacteria are prokaryotes, while euglena is from eukaryotes.

6 Lions are considered multicellular organisms.

Because their bodies consist of more than one cell.

Q8 Study the following figure that represents a living organism, and then answer the questions below:



1 What is the name of this living organism?

Bread mold fungus

2 What is the classification of this living organism?

It is a multicellular organism that belongs to eukaryote

3 What are the differences between this living organism and bacteria?

Bacteria are unicellular organisms that belong to prokaryotes.

Bread mold fungus is a multicellular organism that belongs to eukaryotes.

4 What are the similarities and difference between this living organism and yeast fungus?

Yeast fungus is a unicellular organism.

Bread mold fungus is a multicellular organism. Both of them are fungi.

Q9 Study the following figures that represent some living organisms, and then answer the questions below:

1 What are the kinds of these organisms?

They are unicellular organisms.

2 Why do we see these organisms under a microscope?

Because they are microscopic organisms that are relatively very small in size and they cannot be seen by the naked eye.

3 Which of these organisms is considered from protozoa?

Amoeba – Paramecium.

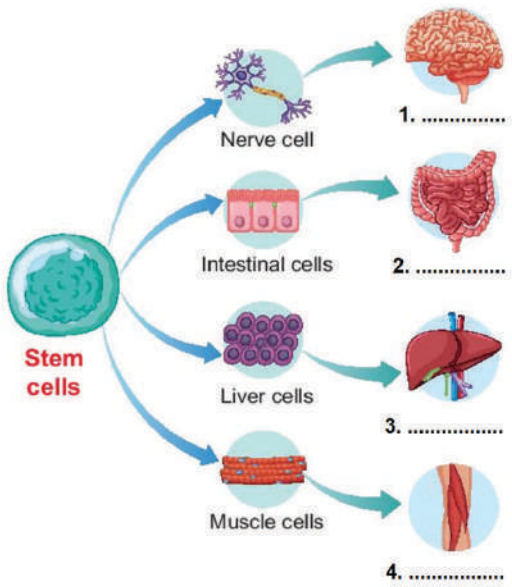
Q10 The following figure shows some of the transformations of stem cells; answer the questions below:

1 Write the names of the cells in the figure.

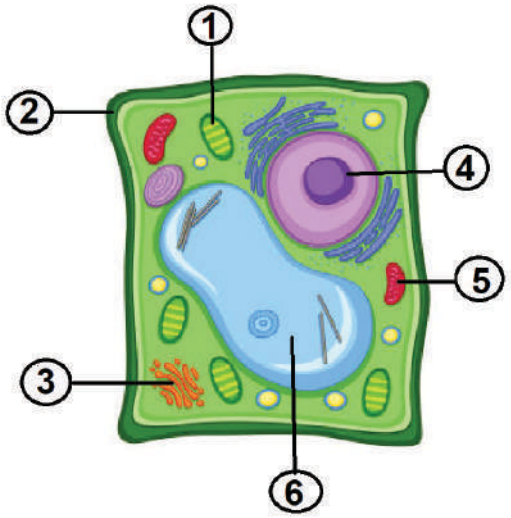
Stem cells

2 Write the names of the organs in the figure.

1. Brain
2. Intestine
3. Liver
4. Muscle



Q11 **The following figure represents the structure of a plant cell; answer the questions below:**



1 Labels the numbers.

1. Chloroplast 2. Cell wall
3. Golgi apparatus
4. Nucleus 5. Mitochondria
6. Vacuole

2 Which of the previous parts are found in the cells of the rabbit's skin tissue?

Golgi apparatus, nucleus, mitochondria, and vacuole

3 Which of the previous parts is found in prokaryotic cells?

Cell wall

Unit 3 Lesson 2: General Characteristics of Living Organisms

Q1 Choose the correct answer:

1 All the following organisms are consumers, except ..... .
a. humans b. birds c. fish d. plants

2 All the following organisms are producers, except ..... .
a. beans b. cats c. green algae d. wheat

3 Chloroplast contains ..... which absorb(s) light energy from the Sun.
a. chlorophyll b. nucleus c. bacteria d. mitochondria

4 An adult frog breathes by its ..... .
a. lungs b. skin c. skin and lungs d. tracheal tubes

5 Insects breathe by their ..... .
a. lungs b. skin c. skin and lungs d. tracheal tubes

6 Dogs breathe by their ..... .
a. lungs b. skin c. skin and lungs d. tracheal tubes

7 Plants get oxygen from air by their ..... .
a. plastids b. stomata c. mitochondria d. nucleus

8 The process of food breakdown and energy release occurs in the ..... .
a. plastids b. stomata c. mitochondria d. nucleus

9 ..... is used in purifying the blood from toxins.
a. Hoffmann voltmeter b. Electroscope
c. Dialysis d. Coulomb meter

10 ..... plant open its leaves during the day and closes them at night.
a. Gazania b. Mimosa c. Sunflower d. Cotton

11 Leaves of ..... plant are drooping and dangling when you touch them.
a. gazania b. mimosa c. sunflower d. cotton

12 Sweat glands excrete ..... through the skin.
a. urine b. carbon dioxide c. wastes d. water

13 Amoeba moves by the ..... .
a. cilia b. flagellum c. pseudopodia d. fins

14 Paramecium moves by the ..... .
a. cilia b. flagellum c. pseudopodia d. fins

Q2 Write the scientific term:

1. It is the process by which a living organism obtains the materials used to build its body and energy. (Nutrition)
2. It is the substance that the plant makes to obtain energy. (Glucose)
3. It is the process by which a plant converts light energy into chemical energy in the presence of water and carbon dioxide gas. (Photosynthesis)
4. It is a process by which a living organism gets rid of harmful waste and excess materials the body does not need. (Excretion)
5. They are specialized cells in opening and closing the stomata in plants. (Guard cells)
6. It's a plant that opens its leaves during the day and closes them at night. (Gazania)
7. It's a plant that moves with the movement of the Sun. (Sunflower)
8. They are organisms that breathe through their skin and lungs. (Amphibians)
9. They are organs that get rid of excess water, salts, and urea in the form of urine. (Kidneys)

Q3 Complete the following sentences:

1. All living organisms share common characteristics, such as nutrition, respiration, transport, excretion and movement.
2. Inorganic materials used in the process of photosynthesis are water and carbon dioxide.
3. The two substances produced by the process of photosynthesis are glucose and oxygen gas.
4. Light energy is converted into chemical energy stored in glucose in the photosynthesis process.
5. Carbon dioxide + Water + Sunlight → Glucose + Oxygen gas
6. Glucose + Oxygen gas → Carbon dioxide + Water + Energy
7. Arteries transport oxygen and digested food from the heart to the rest of the body.
8. Veins transport carbon dioxide and waste from the body cells to the heart.
9. The transport process in plants is parallel to the transport process in humans.

10 The transport system in the plant consists of xylem and phloem.

11 Humans get rid of the exhaled air from carbon dioxide and water vapor.

12 Human get rid of excess water and salts through the kidneys in the form of urine.

13 The plant gets rid of excess water and carbon dioxide through the stomata.

14 Guard cells control the opening and closing of the stomata.

15 The respiratory organs in cockroaches are tracheal tubes, while the respiratory organs in adult frogs are lungs and skin.

Q4 Compare between:

1 Producers and consumers, in terms of: Definition – Examples

P.O.C	Producers	Consumers
Definition	They are organisms that can make their own food through photosynthesis.	They are organisms that depend directly or indirectly on other producers to obtain their food.
Examples	Plants – Green algae	Humans – Animals

2 Humans, fish, and insects, in terms of:

Respiratory organ – Medium for obtaining oxygen

P.O.C	Humans	Fish	Insects
Respiratory Organ	Lungs	Gills	Tracheal tubes
Medium for Obtaining Oxygen	Atmospheric air	Water	Atmospheric air

3 Amoeba, Euglena, and Paramecium, in terms of Means of movement

P.O.C	Amoeba	Euglena	Paramecium
Means of Movement	Pseudopodia	Flagellum	Cilia

Q5 What is meant by:

1 Autotrophs organisms

They are organisms that can make their own food through photosynthesis.

2 Heterotrophs organisms

They are organisms that depend directly or indirectly on other producers to obtain their food.

3 Cellular respiration

It is a vital process of breaking down organic nutrients, especially glucose, in the presence of oxygen to release energy.

4 Movement

It is the process that enables living organisms to move from one place to another.

Q6 Mention the benefit of each one of the following:

1 Chloroplasts:

They carry out the photosynthesis process, which helps the plant obtain glucose as a source of energy.

2 Xylem tissue

It transports water and mineral salts from the roots to the leaves.

3 Phloem tissue

It transports the food from the leaves to the rest of the plant.

4 Arteries

They carry the blood rich in oxygen and glucose from the heart to all body cells and organs.

5 Veins

They return the blood rich in carbon dioxide and waste products back to the heart and lungs.

6 Dialysis machine

It purifies the blood from the toxins when the kidneys stop working properly.

7 Stomata in plants

They help the plant eliminate carbon dioxide and excess water during excretion.

8 Kidneys in humans

They help humans get rid of urea, excess salts, and excess water in the form of urine.

9 Lungs in humans

They help humans get rid of carbon dioxide and water vapor in the exhaled air.

10 Guard cells in plants

They are specialized cells that control the opening and closing of stomata.

11 The human muscular system

It is responsible for the movement of the human body

12 Tracheal tubes in insects

They helps insects, such as locusts, to obtain oxygen gas from the atmospheric air.

Q7. Give reasons for:

1 Green algae are considered producer organisms.

Because green algae can make their own food through photosynthesis.

2 Rabbits are considered consumer organisms.

Because rabbits depend directly on producers to obtain their food.

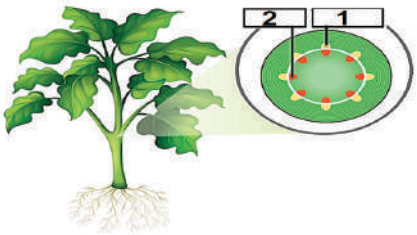
3 The food path in the digestive system is considered a closed path.

Because all organs of the digestive system are connected together.

Q8 The following figure represents the process of artificial photosynthesis; answer the questions below:

1 What is the name of the gas we supply it with?
Hydrogen gas
2 What is the name of the gas that it absorbs?
Carbon dioxide gas
3 What are the benefits of this process?
a. It produces environmentally friendly fuel.
b. It reduces the percentage of carbon dioxide gas.

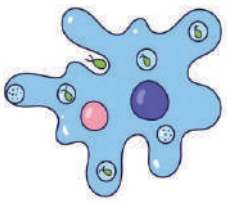
Q9 The following figure represents a cross section of a plant stem; answer the questions below:



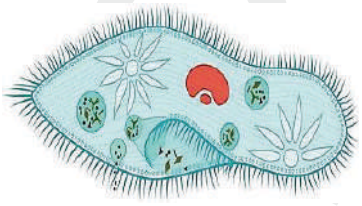
1 Label the data on the drawing.
a. Phloem b. Xylem
2 What are the benefits of each?
- Xylem tissue transports water and minera
salts from the roots to the leaves.
- Phloem tissue transports the food from the leaves to the rest of the plant.

Q10 The following figure shows some living organisms; answer the questions below:

a.



b.



c.

1 What is the type of these living organisms? Unicellular organisms
2 What is the name of these living organisms?
a. Euglena b. Amoeba c. Paramecium

3 Why do we see these organisms under a microscope?

Because they are microscopic organisms that can't be seen by the naked eye.

4 Which of these organisms do we consider to be protozoa?

Euglena

5 How do these organisms move?

a. Euglena moves by flagellum.

b. Amoeba moves by pseudopodia.

c. Paramecium moves by cilia.

Unit 3 Lesson 3: Microbes

Q1 Complete the following sentences:

1. Microbes are prokaryotes, including bacteria, such as root nodule bacteria, decomposition bacteria, and lactic acid bacteria.
2. Eukaryotic microbes include protozoa, such as entamoeba histolytica, and fungi, such as yeast fungus and penicilium fungus.
3. A plant needs nitrogen to form protein, which is used in growth of cells and tissues.
4. Root nodule bacteria live on the roots of leguminous plants in special structures known as root nodules.
5. Farmers leave the roots of beans in the soil after harvesting the crop to decompose by decomposition bacteria into nitrogenous compounds.
6. Yogurt is a protein-rich food essential for body building and muscle growth, and it is rich in calcium necessary for the health of bones and teeth.
7. Yogurt bacteria work to convert lactose into lactic acid.
8. The green color in the blue cheese is caused by a fungus known as penicillium roqueforti fungus.
9. The Scottish scientist Alexander Fleming discovered that penicillium notatum fungus produces a substance that inhibits the growth and reproduction of a type of bacteria.
10. The penicillin substance is extracted from the fungus penicillium notatum, which is used to combat the bacteria causing certain diseases, such as diphtheria and tonsillitis.
11. Yeast fungus is used in the production of bread and ethanol.
12. Harmful microbes can enter the human body through breathing, eating contaminated food, or by penetrating the skin and reaching the bloodstream.
13. Symptoms of dysentery include stomach pain with weight loss as well as loss of appetite.
14. Symptoms of typhoid include high fever, headache, and abdominal swelling.

Q2 Compare between:

Dysentery and typhoid diseases, in terms of:

a. Causative microbe
b. Location of the microbe
c. Methods of transmission of infection
d. Symptoms
e. Treatment method

P.O.C	Dysentery	Typhoid
Causative Microbe	A unicellular protozoan Entamoeba Histolytica	A bacteria called Salmonella Typhi
Location of the Microbe	It lives in the patient's large intestine.	It lives in the human digestive (gastrointestinal) tract.
Methods of Transmission of Infection	By ingesting food contaminated with the microbe	By ingesting food or drinking water contaminated with the microbe
Symptoms	1 Repeated bloody diarrhea 2 Stomach pain 3 Loss of appetite 4 Weight loss 5 Continuous fatigue	1 High fever (40 °C) 2 Fatigue 3 Headache 4 Stomach and muscle pain
Treatment Method	Using antiprotozoal drugs	Using antibiotics

Q3 What is meant by each of:

1 Microbes

They are microscopic living organisms that are found everywhere around us and they may be beneficial or harmful.

2 Root nodule bacteria

They are types of beneficial bacteria that live inside nodules on the roots of leguminous plants to provide the plant with nitrogen in a usable form.

Q4 Mention the importance of each of the following:

1 Leaving the roots of the pea plants in the soil after harvesting the crop

Increasing soil fertility and maintaining the cycle of necessary elements in nature

2 Yogurt bacteria

It is used in making yogurt, which is rich in:

- Protein, which is necessary for body building and muscle growth.
- Calcium, which is necessary for healthy bones and teeth.

3 Penicillium roqueforti mushrooms

It is used in making Roquefort cheese responsible for its distinctive taste and various color.

4 Penicillium notatum

It is used to kill bacteria that cause some diseases, such as diphtheria and tonsillitis.

5 Yeast fungus

It is used in making bread and ethanol.

Q5 Give one example of each of the following:

1 Prokaryotic bacteria. — Root nodule bacteria

2 Eukaryotic fungi. — Yeast fungus

3 A harmful protozoan microbe. — Entamoeba histolytica

4 A harmful eukaryotic microbe. — Entamoeba histolytica

5 An element used by plants for the growth of their cells and tissues.

Nitrogen element

6 Bacteria living on the roots of legumes. Root nodule bacteria

7 Fungus used in the manufacture of antibiotics.
Penicillium Notatum Fungus

8 Mushroom used as a source of vitamin B complex. Yeast fungus

9 A food rich in protein and calcium. Yogurt

10 Diseases caused by Salmonella Typhi Bacteria. Typhoid diseases

11 A disease caused by Entamoeba Histolytica. Dysentery disease

Q6 What happens when:

1 A plant does not obtain carbon, hydrogen, and oxygen elements?
The plant can't form carbohydrates in the photosynthesis process.

2 A plant does not get nitrogen?
The plant can't form protein, which is very important for the growth of muscles and body building.

3 Farmers leave the roots of clover plants in the soil after harvesting the crop?
The roots decompose by decomposition bacteria into nitrogenous compounds that are soluble in water, which increases the soil fertility.

4 Nodular bacteria on the roots of a bean plant are absent?
The plant can't obtain nitrogen in a usable form.

5 We add pre-prepared yogurt to the milk immediately after boiling?
Yogurt contains lactic acid bacteria that change lactose into lactic acid, and gives the yogurt its distinctive sour taste and thickness.

6 You do not keep yogurt in the refrigerator?
The activity of lactic acid bacteria will continue (won't stop).

7 You leave yogurt in a warm place for more than 5 hours?
The bacteria will grow to complete the fermentation of the milk, causing the milk to coagulate.

8 You do not add a spoonful of sugar to the saline solution used in making pickled olives?
The olives still have a bitter taste.

9 A person eats food and drinks water contaminated with Salmonella typhi bacteria?

The person will be infected with typhoid disease.

10 A person eats food contaminated with Entamoeba histolytica bacteria?

The person will be infected with dysentery disease.

Q7 The following figure represents one of the types of bacteria; answer the questions below:

1 What is the name of the bacteria in the figure?

Salmonella Typhi bacteria

2 What is the name of the disease caused by the bacteria shown in the figure?

Typhoid disease

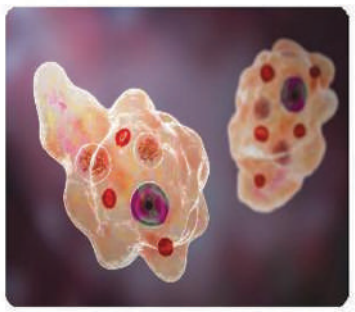
3 What are the symptoms of that disease?

a. High fever (40°C)
b. Fatigue
c. Headache
d. Stomach and muscle pain

4 What is the treatment method?

Using antibiotics

Q8 The following figure represents one of the types of single-celled organisms; answer the questions below:



1 What is the name of the living organism in the figure?

Entamoeba Histolytica

2 What is the name of the disease caused by the bacteria shown in the figure?

Dysentery disease

3 Where do these bacteria live in the human body?

They live in the patient's large intestine.

4 What are the symptoms of that disease?

a. Repeated bloody diarrhea
b. Stomach pain
c. Loss of appetite
d. Weight loss
e. Continuous fatigue

Unit 4 Lesson 1: The Earth and the Solar System

Q1 Put (✓) or (✗), then correct the incorrect sentences:

1. The four planets closest to the Sun have thick crusts, except for Venus. (✗)
   The four planets closest to the Sun have thick crusts, except for Mercury.
2. Jupiter is similar to Mercury and Uranus in the composition of its atmosphere. (✓)
3. The length of the shadow can be relied on to determine the time. (✓)
4. The Earth rotates on its axis every 365.5 days. (✗)
   The Earth rotates on its axis every 24 hours.
5. The Earth rotates around its horizontal axis every 24 hours. (✗)
   The Earth rotates on its vertical every 24 hours.
6. The length of the shadow formed at sunset is the greatest possible. (✓)
7. Spring begins after the winter solstice. (✓)
8. The apparent height of the Sun is the lowest in winter. (✓)
9. The succession of seasons leads to a change in temperature. (✓)
10. The apparent position of the Sun in the sky changes from east to west as a result of the Earth's rotation around its axis. (✓)
11. Crops vary according to the seasons of the year. (✓)

Q2 Write the scientific term:

1. It is the season in which the number of daylight hours is greater than any other season of the year. (Summer)
2. It is the season in which the number of night hours is greater than the number of day hours. (Winter)
3. It is the planet that has a thin crust full of craters. (Mercury)
4. It is the planet that is mainly composed of oxygen and nitrogen gases. (Earth)

Q3 Cross out the odd word:

1. Mercury – Mars – Earth – Saturn (Saturn)
2. Watermelon – Lettuce – Cucumber – Zucchini (Lettuce)
3. Number of daylight hours 13 hours – High temperature – The axis of rotation is tilted towards the Sun – Number of night hours 12 hours (Number of night hours 12 hours)

Q4 Complete the following sentences:

1. The solar system consists of a star, the Sun, and eight planets orbiting it.
2. Venus precedes Earth in proximity to the Sun, and it is followed by Mars.
3. The crust of Mercury is full of craters caused by meteor impacts.
4. The crust of Earth is thicker than the crust of Venus.
5. Jupiter and Saturn are similar in that they have the same atmospheric components, but they do not have a crust in them.
6. Mars is known as the red planet, while Neptune is known as the blue planet.
7. The largest planet in size is Jupiter, and Earth ranks fifth in terms of size.
8. Earth completes one full rotation around its axis every 24 hours.
9. The Earth's axis is tilted at an angle of 23.5° from the perpendicular line on the plane of its orbit around the Sun.
10. As a result of the Earth's rotation around its axis in front of the Sun, the sequence of day and night and the apparent movement of the Sun occur.
11. The apparent motion of the Sun is the change in the Sun's position from east to west due to the Earth's rotation around its axis.
12. The number of planets with a crust is four, while the number of planets with no active volcanoes is two.
13. The winter solstice begins on 22nd of December, while the autumn equinox begins on the 23rd of September.
14. The northern end of the Earth's axis is tilted at 23.5° from the Sun in summer.

15 The duration of day and night is nearly equal in spring and autumn.

16 The ancient Egyptians used sundials to determine the time based on the length and direction of the shadow.

17 Cucumber, onion, and watermelon are among summer crops, while oranges and lettuce are among winter crops.

Q5 Compare between:

1 Venus and Saturn, in terms of: Crust – Atmosphere – Volcanic activity

P.O.C	Venus	Saturn
Crust	It has a thick crust compared to Mercury.	It has no crust as it is composed of gases only.
Atmosphere	It's very dense, composed mainly of carbon dioxide gas.	It is composed of hydrogen and helium gases.
Volcanic Activity	Many active volcanoes	No volcanoes

2 The Earth's revolution around the Sun and its rotation around its axis, in terms of the result of the rotation.

P.O.C	The Earth's Revolution Around the Sun	The Earth's Rotation Around Its Axis
The Result of the Rotation	Cycle of four seasons	1 Cycle of day and night 2 Apparent movement of the Sun

3 Winter and summer, in terms of:

Number of daylight hours – Number of night hours – Proximity to the Sun

P.O.C	Winter	Summer
Number of Daylight Hours	Less than 12 hours	More than 12 hours
Number of Night Hours	More than 12 hours	Less than 12 hours
Proximity to the Sun	The northern end of the Earth's axis leans away from the Sun.	The northern end of the Earth's axis leans closest to the Sun.

Q6 State the benefit of the following:

Sundial

It is used to determine the time based on the length and the direction of the shadow.

Q7 Give reasons for:

1 The planets of the solar system do not collide with each other while orbiting the Sun.

Because they orbits the Sun in oval (elliptical) paths at different distances from the Sun.

2 The surface of Mercury is full of craters.

Because they are caused by meteors impacts.

3 The atmosphere of Uranus appears blue-green in color.

Because its atmosphere is composed of hydrogen, helium, and methane.

4 There are no volcanoes on the surface of Saturn.

Because Saturn has no crust and it is composed of gases only.

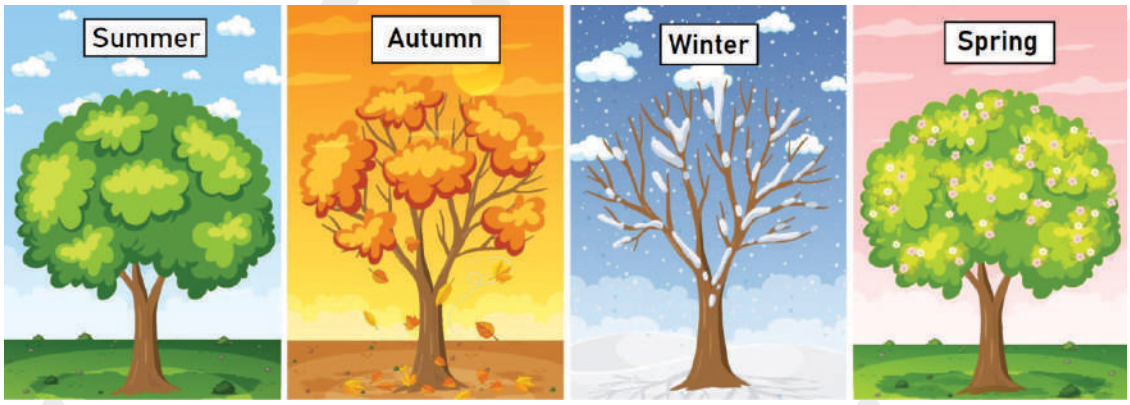
5 The angles of incidence of sunlight on different areas of the Earth's surface are different.

Because Earth tilts at an angle of 23° from its imaginary perpendicular line.

Q8 What happens when:

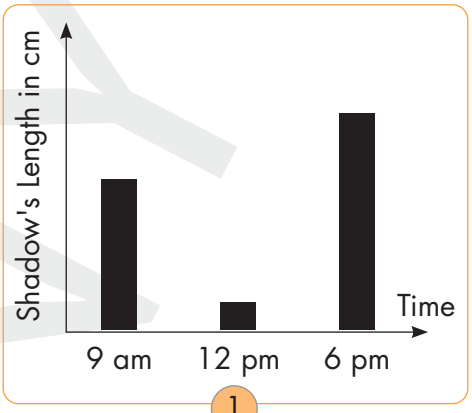
1. Earth rotates around the Sun in a complete revolution?
   The cycle of seasons occurs.
2. Earth rotates around its axis in a complete rotation?
   The cycle of day and night occurs.
3. There is methane gas within the components of the atmosphere of Uranus?
   This gives Uranus its greenish blue color.
4. The Earth's axis tilts toward the Sun one time and away from the Sun another time?
   Summer and winter seasons occur.
5. The numbers of hours of night and day are equal?
   Spring and autumn seasons occur.

Q9 Study the figures showing the seasons of the year, then complete the sentences below:

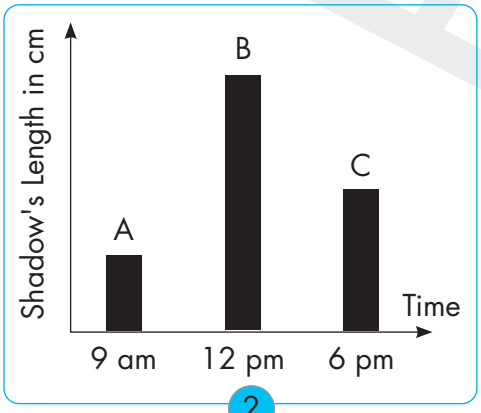


1. The northern end of the Earth's axis is tilted toward the Sun in summer, and is tilted away from the Sun in winter.
2. In spring and autumn, the northern end of the Earth's axis is not tilted.
3. The variation in the tilt of the Earth's axis leads to different light intensities on Earth.

Q10 **Look at the following figures that express the length of a building's shadow from nine o'clock in the morning until six o'clock in the evening, then answer the questions below:**



1



2

1 Why does the length of the shadow differ at the three times in figure 1?

Due to the apparent movement of the Sun throughout the day.

2 In figure 1, what is the correct order of the shadow according to sunrise and sunset?

Sunshine: 9 am Sunset: 6 pm

Unit 4 Lesson 2: Lunar Eclipse

Q1 Choose the correct answer:

1 The number of phases of the moon during the Arabic month as it revolves around the Earth is ..... .

a. 5 b. 6 c. 7 d. 8

2 The moon is in the second quarter after its full ..... revolution around the Earth.

a. 1/4 b. 1/2 c. ¾ d. 1

3 The phase in which the moon appears as a dark disk is in the ..... .

a. beginning of the Arabic month b. middle of the Arabic month

c. end of the Arabic month d. 14th of the Arabic month

4 The moon appears in different phases because ..... .

a. of the Earth's rotation around the moon

b. of the change in the area of the illuminated part of the moon

c. the moon is in the Earth's shadow area

d. the moon is in the Earth's penumbra

5 The time it takes the moon to rotate around the Earth is ..... the time it takes to rotate around its axis.

a. greater than b. less than c. equal to d. half

6 If the month of Ramadan begins on 11 March, the moon will reach its first quarter on ..... March.

a. 18 b. 22 c. 25 d. 28

7 When the illuminated side of the moon is facing the Sun and the dark side is facing the Earth, it's in the ..... phase.

a. Crescent b. Full Moon c. New Moon d. Gibbous

8 The lunar eclipse occurs in/on ..... of the Arabic month.

a. the beginning b. the middle

c. the end d. day 21

9 ..... is considered the closest celestial body to Earth.

a. Venus b. Mars c. The moon d. The Sun

10 When the moon enters the region of the ....., it is not an eclipse.

a. moon's shadow
b. Earth's shadow
c. Earth's penumbra
d. moon's penumbra

Q2 Complete the following sentences:

1 The moon takes about 29.5 days to orbit the Earth.
2 The moon orbits the Earth from west to east.
3 The phase of the moon following the Crescent is First Quarter, while the phase following the Last Quarter is Second Crescent.
4 When the moon appears as a fully illuminated disk, it is in the Full Moon phase, and when the disk is dark, it is in the New Moon phase.
5 The moon becomes a First Gibbous after 11 days from the New Moon phase, and ¾ of its surface is illuminated from the Last (Third) Quarter.
6 A total lunar eclipse occurs when the moon is entirely in the Earth's shadow.
7 The moon appears as a red disk illuminated with faint light when it is entirely in the Earth's umbra.

Q3 What is meant by:

1 The moon

It is a dark celestial body that orbits the Earth and it appears illuminated at the night sky.

2 Moon phases

They are different stages that the moon goes through during its orbit around the Earth as a result of changing its position relative to both the Earth and Sun.

3 Umbra (shadow area)

It is a dark area that doesn't receive any light rays as a result of the presence Earth in the path of sunlight.

4 Penumbra

It is a partially illuminated area that receives some light rays, which surround the shadow created by the presence of an opaque object in the path of light rays.

5 Transparent objects

They are objects that allow light to pass through them.

6 Opaque objects

They are objects that don't allow light to pass through them.

7 Lunar eclipse

It is a natural phenomenon that occurs when Earth is located between the Sun and the moon, blocking sunlight partially or completely.

8 Total eclipse

It is a natural phenomenon that occurs when the moon is completely within the Earth's shadow.

9 Partial eclipse

It is a natural phenomenon that occurs when a part of the moon is in the Earth's shadow and the other part is in the Earth's penumbra.

Q4 Various questions:

1 Mention the phases of the moon in the first half of the Arabic month.

a. First (Waxing) Crescent
b. First Quarter
c. First (Waxing) Gibbous
d. Full Moon

2 What is the time period between the First Quarter and the Second Gibbous phases?

10 days

3 What does the moon look like when it completes:

a. Half orbit? b. Quarter orbit? c. Three-quarter orbit?

a. The moon appears as a complete bright disc (Full Moon).
b. The right half of the moon is illuminated (First Quarter).
c. The left half of the moon is illuminated (Last Quarter).

4 Mention the lunar eclipses types and their causes?

a. Total Lunar Eclipse: It occurs when the entire moon is located within the shadow of Earth (Umbra).

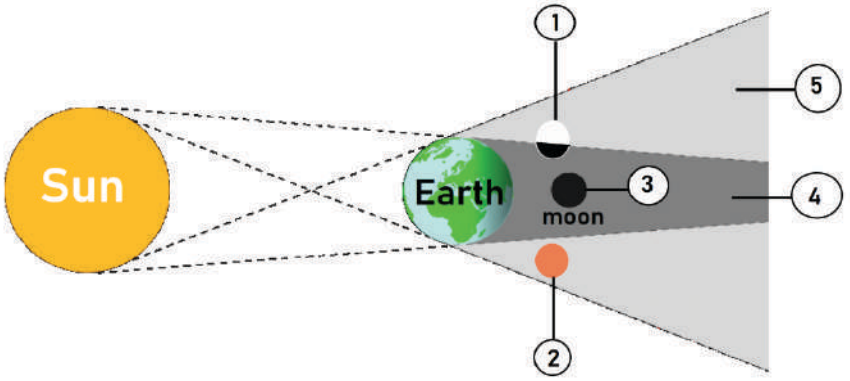
b. Partial Lunar Eclipse: It occurs when a part of the moon is located within the shadow of Earth (Umbra) and the other part is located in penumbra.

5 Arrange the lunar phases in ascending order based on the size of the dark portion of the moon's surface: First Crescent – Full Moon – First Quarter – Second Gibbous – New Moon

1. New Moon 2. First Crescent 3. First Quarter

4. Second Gibbous 5. Full Moon

Q5 Study the following figure, then answer the questions below:



1 What is the name of areas 4 and 5?

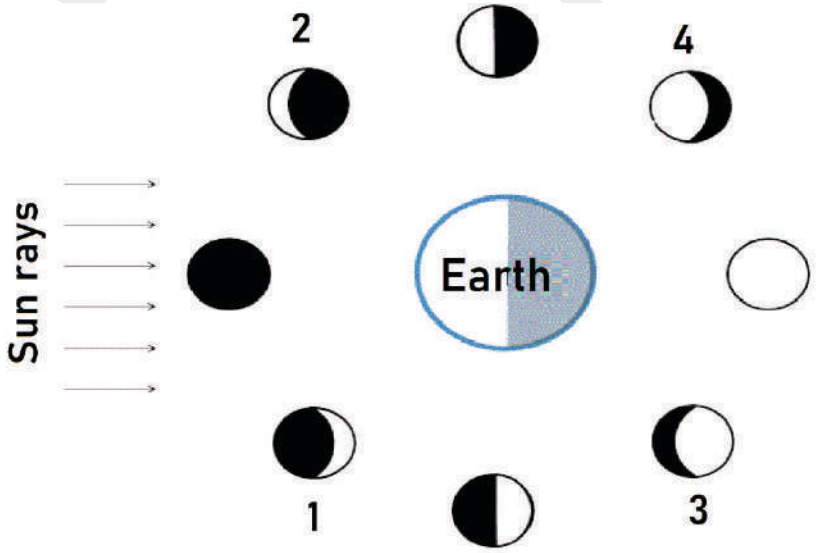
4 Shadow of Earth (Umbra) 5 Penumbra

2 What is the name of the phenomenon that occurs to the moon in positions 1 and 3?

1 Partial Lunar Eclipse 3 Total Lunar Eclipse

3 Complete: The moon position number 2 appears as a red disc.

Q6 The following figure shows the moon phases; answer the questions below:



1 What are the names of phases (1), (2), (3), and (4)?

(1) Waxing Crescent (2) Waning Crescent

(3) Waxing Gibbous (4) Waning Gibbous

2 What is the difference between phases (1) and (3)?

(1) A small part of the moon is illuminated on the right side.

(3) 3/4 of the side of the moon is illuminated on the right side.

Q7 Give reasons for:

1 The moon appears bright even though it is an opaque body.

Because the moon reflects the sunlight falling on it.

2 An observer on the Earth's surface sees only one face of the moon.

Because The time it takes for the moon to complete one orbit around the Earth is the same as the time it takes for the moon to complete one full rotation on its axis.

3 The moon on the 14^{th} of the Arabic month is called a Full Moon.

Because the moon appears as a complete bright disc.

4 A shadow is formed when a book is placed in front of a lit electric lamp.

Because the book is an opaque object that doesn't allow light to pass through it.

5 No shadow is formed when a glass plate is placed in front of a lit electric lamp.

Because glass is a transparent object that allows light to pass through it.

6 The partial lunar eclipse phenomenon occurs.

Because the entire moon is located within the shadow of the Earth (umbra).

7 The total lunar eclipse phenomenon occurs.

Because a part of moon is located within the shadow area of the Earth (umbra), while the other part is located in penumbra.

Q8 What happens when:

1 The moon is entirely located in the Earth's shadow?

The total lunar eclipse phenomenon occurs.

2 The moon is entirely located in the Earth's penumbra?

The moon appears as a red disc, and this is not considered a lunar eclipse.

3 Part of the moon is located in the penumbra of Earth?

The partial lunar eclipse phenomenon occurs.

المراجعة رقم (3)

الترم الاول

Question 1 Choose the correct answer

1. The following shapes show the appearance of the moon at four different days in the same country


1 June


8 June


15 June


23 June

What is the appearance of the moon on June 3rd?


(a)


(b)

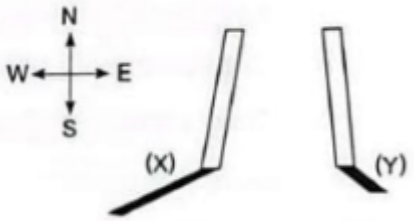

(c)


(d)

2. What is the time interval between the full moon and new moon phases
   (a) 11 days (b) 15 days
   (c) 17 days (d) 29 days
3. When the moon completes the second quarter of its orbit, it is in the…… phase
   (a) waxing gibbous (b) new moon
   (c) full moon (d) first quarter
4. The main reason for the lunar eclipse is
   (a) the moon's orbit around Earth
   (b) Earth's orbit around the Sun
   (c) the moon being between the Sun and Earth
   (d) Earth being between the Sun and the moon
5. The partial lunar eclipse occurs when
   (a) the moon is in both Earth's shadow and penumbra
   (b) the moon is in Earth's penumbra
   (c) the moon is in the waxing crescent phase
   (d) the moon is in the new moon phase
6. All the following are correct, except
   (a) Venus is a rocky planet, while Neptune is a gaseous planet
   (b) the atmospheric composition of Venus and Mars are similar
   (c) there are volcanoes on both Earth and Uranus
   (d) Saturn's diameter is larger than Uranus's diameter

7. The day length can reach 13 hours and 40 minutes in
(a) March (b) July
(c) September (d) December

8. The opposite figure shows the length and direction of the shadow of a pole fixed in the ground at two different times of the day. If shadow (X) formed at 10 am, shadow (Y) forms at



(a) 9 am
(b) 11 am
(c) 2 pm
(d) 6 pm

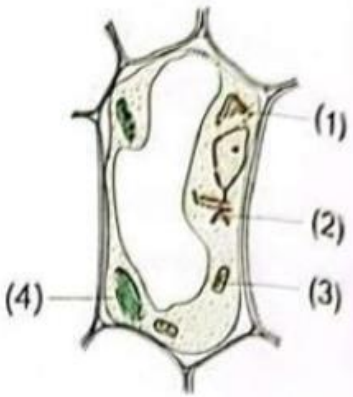
9. All the following describe spring, except
(a) daylight hours are equal to night hours
(b) the apparent height of the sun in it is lower than in summer
(c) Earth's axis does not lean to the sun.
(d) the cast shadows in it are longer than in winter

10. The microbe used in the production of ethyl alcohol differs from the microbe that causes typhoid fever in containing
(a) plasma membrane (b) Cytoplasm
(c) cell wall (d) nucleus

11. Which of the following represents the microorganism that causes typhoid fever ?
(a) Unicellular protozoan (b) Unicellular bacterium
(c) Unicellular fungus (d) Multicellular fungus

12. Yogurt industry produces
(a) ethyl alcohol only (b) lactic acid only
(c) ethyl alcohol and lactic acid (d) lactose and lactic acid

13. The opposite diagram shows a plant cell. Which of the following refers to one of the cell organelles responsible for carrying out the photosynthesis process?



(a) (1)
(b) (2)
(c) (3)
(d) (4)

14. Which of the following is absorbed by leaves during the photosynthesis process?
(a) O_2 gas only. (b) CO_2 gas only
(c) CO_2 gas and light energy. (d) Water and O_2 gas

15. All of the following are inorganic substances used by the plant in the photosynthesis except
(a) water
(b) mineral salts
(c) CO_2 gas
(d) glucose

16. Which of the following is required for occurrence of artificial photosynthesis?
(a) Hydrogen gas only
(b) Nitrogen gas only
(c) Hydrogen gas and CO_2
(d) CO_2 gas and water

17. What is the final product of gas exchange in living organisms
(a) Oxygen gas
(b) Carbon dioxide gas
(c) Hydrogen gas
(d) Nitrogen gas

18. Which of the following living organisms does not have a specialized respiratory system
(a) Amoeba
(b) Tilapia fish
(c) Frog
(d) Honey bee

19. A cell that performs all vital processes is described as
(a) differentiated
(b) undifferentiated
(c) specialized
(d) unspecialized

20. All the following are classified as microorganisms, except
(a) Amoeba
(b) Euglena
(c) Paramecium
(d) Bread mold fungus

21. All the following organisms have specialized cells, except
(a) beans
(b) yeast
(c) corn
(d) elephant

22. All the following from characteristics of prokaryotes, except
(a) most are unicellular
(b) organisms simple in their structure
(c) relatively small in size
(d) their genetic material is not surrounded by a nuclear membrane.

23. Which of the following living organisms lack most organelles in their cells?
(a) Amoeba
(b) Euglena
(c) Paramecium
(d) Bacteria

24. Yeast fungus and bread mold fungus share the characteristic that both are
(a) eukaryote
(b) unicellular
(c) prokaryote
(d) relatively large in size

25. You have two objects, the mass of the first is 5 kg and the mass of the second is 20 kg Which of the following describes the attraction forces between the two objects?

(a) The force of attraction of the first object to the second is greater.
(b) The force of attraction of the second object to the first is greater
(c) Both objects attract each other with the same force
(d) There is no attraction force between the two objects

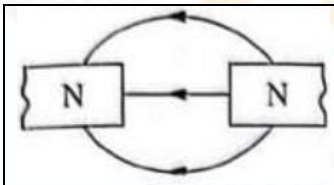
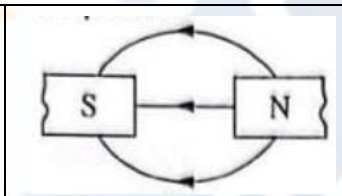
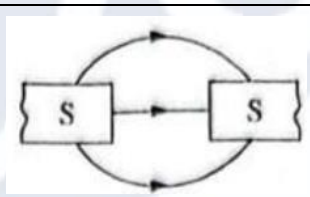
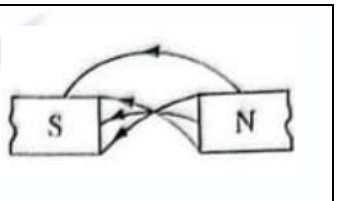
26. What is the force that causes a ball to fall from a high position to Earth's surface?

(a) Gravity (b) Magnetism
(c) Friction (d) Collision

27. An object weight 600 N at the base of a high mountain. Which of the following could describe its mass and weight at the top of this mountain?

Choices	Mass	Weight
(a)	60 kg	600N
(b)	6kg	600N
(c)	60kg	598N
(d)	6kg	598N

28. Which of the following shapes represents correctly the magnetic field lines between two magnetic poles

			
(a)	(b)	(c)	(d)

29. When a magnet is brought close to a piece of cobalt

(a) an attractive force arises between them
(b) a repulsive force arises between them
(c) both an attractive and a repulsive forces arise between them.
(d) no force arises between them

30. All the following describe both electric and magnetic field lines, except that they are

(a) imaginary (b) flexible
(c) do not intersect (d) crowd at the poles

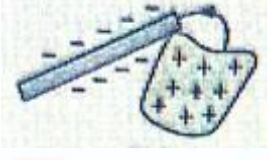
31. Among the electrical conductors is

(a) a glass rod (b) a wooden ruler
(c) a plastic straw (d) metal nail.

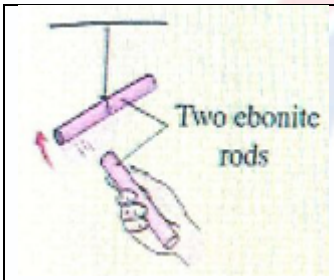
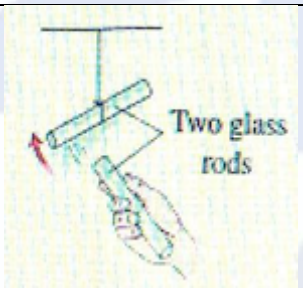
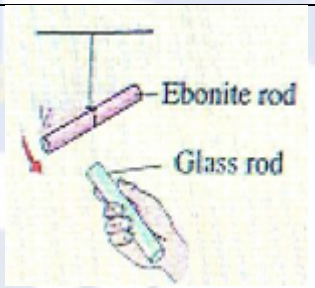
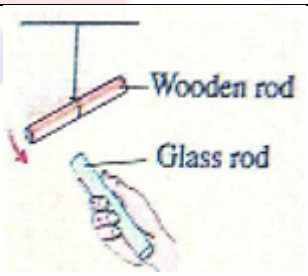
32. All the following are electrical nonconducting materials, except

(a) wood (b) carbon
(c) ebonite (d) silk

33. When a rod is rubbed with a piece of cloth, it acquires a negative electric charge. Which of the following explains how the electric charges transferred between them?

			
(a)	(b)	(c)	(d)

34. The following figures show rods made of different materials, where the stable rod was brought close to the free-moving rod after rubbing both of them with a piece of silk in each time. Which of these figures is incorrect?

			
(a)	(b)	(c)	(d)

35. Which of the following represents an ionic bonding?

(a) $[:\ddot{K}:]^+[F]^-$ (b) $[Li]^+[:\ddot{B}r:]^-$

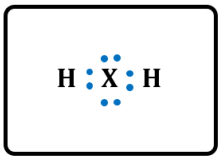
(c) $H{-}\ddot{O}{-}H$ (d) $\ddot{O}::C::\ddot{O}$

36. What is the molecular formula of the compound formed through the bonding of an alkali metal (A) with an element (B) from group 6A?

(a) A_2B_2 (b) A_2B

(c) AB_2 (d) AB

37. An atom of element (X) binds to two hydrogen atoms, as shown in the opposite figure What is the type of bonding in this molecule? And what is the group number of element (X) in the periodic table



(a) Ionic / Group 6A

(b) Ionic / Group 2A

(c) Covalent/Group 6A

(d) Covalent/Group 2A

38. Which of the following describes the properties of copper metal?

Choices	Melting point	Sinking in water	Conducting electricity
(a)	-40°C	✗	✓
(b)	8°C	✗	✓
(c)	100°C	✓	✗
(d)	1083°C	✓	✓

39. All the following are physical properties of a piece of calcium carbonate, except that it

(a) is solid.
(b) does not dissolve in water
(c) is white in colour
(d) produces gas bubbles with vinegar

40. The following table shows samples of different substances:

Sample	Shiny	Flexible	Conducts electricity
(1)	✗	✗	✓
(2)	✓	✗	✗
(3)	✗	✓	✗
(4)	✓	✓	✓

Which sample its substance can be used in making water hose?

(a) Sample (1). (b) Sample (2).
(c) Sample (3) (d) Sample (4).

41. Which of the following pairs of elements are located in the same period in the modern periodic table?

(a) $_{10}Ne$ and $_{11}Na$ (b) $_{17}Cl$ and $_{11}Na$
(c) $_{3}Li$ and $_{2}He$ (d) $_{10}Ne$ and $_{18}Ar$

42. The atomic number of the inert gas which is located in the 2nd period is…….

(a) 2 (b) 8
(c) 10 (d) 18

43. An alkali metal is located in the 2nd period, its atomic number is

(a) 9 (b) 7
(c) 5 (d) 3

44. If the last energy level of a halogen atom is the level L, its atomic number is

(a) 7 (b) 9
(c) 17 (d) 19

45. An element is located in period 3, group 3A and its nucleus contains 14 neutrons, so its mass number is

(a) 30 (b) 27
(c) 24 (d) 20

46. Lewis structure includes 2 unpaired electrons in the atom of

(a) $_{5}C$ (b) $_{7}N$
(c) $_{15}P$ (d) $_{16}S$

47. Which of the following represents the Lewis structure of nitrogen atom $_7N$?

(a) 
(b) 
(c) 
(d) 

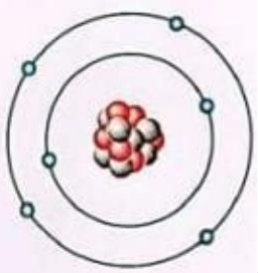
48. What is the subatomic component that has the smallest mass ?

(a) Proton
(b) Neutron
(c) Electron
(d) Nucleon

49. Which of the following subatomic components has a mass of 1 u?

(a) Proton only.
(b) Electron only.
(c) Each of neutron and electron
(d) Each of neutron and proton

50. The opposite figure shows the structure of the atom (x). What is the symbol that represents this atom?



(a) $^{13}_{7}X$
(b) $^{13}_{6}X$
(c) $^{6}_{7}X$
(d) $^{7}_{6}X$

51. Which of the following atoms has number of neutrons equals twice the number of protons in it's nucleus ?

(a) $^{1}_{1}H$
(b) $^{3}_{1}H$
(c) $^{4}_{2}He$
(d) $^{7}_{2}He$

52. The nucleus of potassium atom contains 19 protons, then the electron with the highest energy in this atom is found in the

(a) first energy level.
(b) second energy level
(c) third energy level
(d) fourth energy level

53. When the illuminated side of the moon is facing the sun and the dark side is facing the earth in the phase.

(a) Crescent
(b) Full Moon
(c) New Moon
(d) Gibbous

54. The lunar eclipse occurs in .....the Arabic month

(a) beginning
(b) middle
(c) end
(d) day 21 of the Arab month

55. .....is considered the closest celestial body to Earth

(a) Venus
(b) Mars
(c) The moon
(d) The sun

56. When the moon enters the region of .....it is not an eclipse

(a) Moon shadow
(b) Earth's shadow
(c) Earth's penumbra
(d) The penumbra of the moon

57. The number of phases of the moon during the Arabic month as it revolves around the Earth.

(a) 5 (b) 6
(c) 7 (d) 8

58. The moon is in second quarter after it is full .....revolution around the earth

(a) ¼ (b) ½
(c) ¾ (d) 1

59. The phase in which the moon appears as a dark disk is in.....

(a) The beginning of the Arab month (b) The middle of the Arab month
(c) the end of the Arab month (d) 14^{th} of the Arabic month

60. The moon appears in different phases because of

(a) The Earth's rotation around the Moon
(b) Change in the area of the illuminated part of the moon
(c) The moon is in the Earth's 's shadow area
(d) The moon is in the Earth's penumbra

61. The time it takes the moon to rotate around the Earth is ……the time it rotates around its axis

(a) greater than (b) less than
(c) equal to (d) half

62. lonic bonding arises between calcium. element $_{20}Ca$ and……. element

(a) $_{4}Be$ (b) $_{8}O$
(c) $_{12}Mg$ (d) $_{19}k$

63. what is the number of covalent bond in a water molecule?

(a) one single and one double bond (b) Two double bonds.
(c) one single and one triple bond (d) Two single bonds

64. The bond in hydrogen molecule is

(a) single covalent (b) double covalent
(c) ionic (d) triple covalent

65. The number of electrons in the following ions equals that in sodium ion, except.

(a) $_{13}Al$ (b) $_{17}C1$
(c) $_{12}Mg$ (d) $_{8}O$

66. The ion of Sulphur atom $^{32}S_{16}$ Contains.

(a) 18 Protons, 16 electrons (b) 14 Protons, 16 electron's
(c) 16 Protons, 16 electrons (d) 16 protons, 18 electrons

67. The alkali earth metals are located in the..... of the periodic table

(a) Left (b) Right
(c) Middle (d) bottom

68. The alkali metals are located in the..... of the periodic table

(a) Left (b) Right
(c) Middle (d) bottom

69. The number of p-block elements in each period of the periodic table (except the 1st period) is
(a) 2 (b) 6
(c) 10 (d) 14

70. The…….. block Contains most types of elements
(a) S (b) P
(c) D (d) F

71. The zero group includes
(a) metals (b) liquid nonmetals
(c) metalloids (d) inert gases

Question 2 Mark (✓) or (✗) for each statement, with correction

1.	The third energy level in the atom is located between levels K and M and can be saturated by 8 electrons	( )
2.	The higher energy levels are filled with electrons first	( )
3.	The elements $_{11}Na$ and $_{13}Al$ have the same number of electrons in the energy level (L).	( )
4.	The atomic number is written at the upper left side of the element's symbol	( )
5.	The atom containing 13 protons, 14 neutrons and 13 electrons is electrically neutral	( )
6.	The number of neutrons is twice the number of protons in the nucleus of tritium isotope	( )
7.	Magnesium-24 and magnesium-25 isotopes have the same number of protons	( )
8.	The modern periodic table contains 11 gaseous elements	( )
9.	The (p)-block in the modern periodic table consists of 5 vertical groups.	( )
10.	The (d)-block contains most types of elements	( )
11.	Aerogel is characterized by its high density	( )
12.	Nitrogen gas is not affected by high temperatures.	( )
13.	Distinguishing between two different solutions by adding a certain reagent is a physical change	( )

14.	Lemon and toothpaste can be distinguished by using litmus paper	( )
15.	Magnetic forces increase closer to the poles of the magnet.	( )
16.	The compass box is made of plastic so that it does not affect the direction of the magnetic needle.	( )
17.	The north pole of a magnet attracts the north pole of another magnet	( )
18.	A repulsive force arises between a magnet and some materials.	( )
19.	Electric field lines start from the positive charge, while magnetic field lines start from the pole of the magnet	( )
20.	A repulsive force arises between a magnet and some materials.	( )
21.	Electric field lines start from the positive charge, while magnetic field lines start from the N pole of the magnet	( )
22.	Magnetic field lines extend between two negative electric charges	( )
23.	The compass needle is deflected when a magnet is brought close to it	( )
24.	Bacteria contain a prokaryotic nucleus, while bread mold fungus contains an eukaryotic nucleus	( )
25.	Prokaryotes are simple in structure and relatively small in size	( )
26.	Yeast fungus contains genetic material found in the cytoplasm	( )
27.	The genetic material of prokaryotes is surrounded by a nuclear membrane	( )
28.	The genetic material of human cells is found in the cytoplasm	( )
29.	The scientists have developed artificial photosynthesis to reduce food problems for human	( )
30.	CO_2 emissions from car exhausts increases the global warming	( )
31.	All eukaryotes have specialized respiratory systems.	( )

32.	Obtaining oxygen from surrounding environment and getting rid of CO_2 in living organisms is called gas exchange	( )
33.	The respiratory organ in insects differs from that in fish.	( )
34.	Entamoeba Histolytica is a prokaryotic unicellular protozoan	( )
35.	One of the main symptoms of dysentery is repeated bloody diarrhea	( )
36.	Typhoid disease is a bacterial disease caused by Salmonella Typhi.	( )
37.	A symptom of typhoid disease is the high fever that can reach 45°C	( )
38.	Mercury is the closest planet to the Sun and the largest in size	( )
39.	Mars is the first in the group of the outer planets.	( )
40.	Neptune is the second farthest gaseous planet from the Sun	( )
41.	Lunar eclipse does not occur during every full moon	( )
42.	The moon's orbital plane around the earth is aligned with Earth's orbital plane around the Sun	( )
43.	The moon's orbital plane around the earth is aligned with Earth's orbital plane around the Sun	( )
44.	If the moon is completely within Earth's shadow, then this is not an eclipse	( )

Question 3 Complete the following sentences:

1.	**Limestone is composed of (……..) molecules, which in turn are made of smaller units called (…….)**	
2.	**The atom is the (……) and (……) unit of any matter.**	
3.	**The scientist (……) proposed the first scientific theory about the atom while the scientist (……) proposed the first model of the atom based on experimental basis**	

4.	**The elements in Mendeleev's periodic table were arranged according to(…….) while in Moseley's periodic table, they were arranged according to(…….)**
5.	**the modern periodic table, elements are classified according to the ascending order of (…….) and the method of filling (…….)**
6.	**The only liquid halogen is (…….) while(Fluorine) and(…….) are gaseous halogens**
7.	**The number of inert gases is(…….)while the number of other nonmetal gases is (…….)**
8.	**Each period of the periodic table starts with an(Metallic)element, except period 1, which starts with(…….) element**
9.	**The alkali metals belong to (…….) block, while the halogens belong to (…….) block**
10.	The physical separation methods of mixtures include(…….) , (…….) and (…….)
11.	Mixtures are classified into (…….) mixtures and(…….) mixtures
12.	Stirring a spoonful of table salt in a beaker of water forms a (…….) whose components can be separated by (…….)
13.	A mixture whose components can be distinguished by the naked eye is known as(…….) mixture and its components can be separated by (…….)
14.	The nearest noble gas to chlorine,$_{17}$Cl is…….while the nearest noble gas to sodium $_{11}$Na is …….
15.	lonic bonding arises as a result of the electrostatic attraction between(…….) And (…….)
16.	Methane molecule contains(…….)covalent bonds, while oxygen molecule contains one(…….) covalent bond.
17.	Sodium chloride is (…….) compound, while hydrogen chloride is(…….) compound
18.	(…….) bonding may result in molecules of elements or molecules of compounds while(…….) bonding results in molecules of compounds only
19.	The aqueous solutions of(ionic)compounds conduct electricity, while(…….) compounds do not conduct electricity.
20.	A life application of the attraction between the opposite electric charges is (…….)
21.	In electrostatic plating, the paint spray is charged with a(…….) charge is sprayed on the object to be painted, which is charged with a (…….) electric charge

22.	Objects can be charged with static electric charges by(…….) and(…….)
23.	Electric force lines start from the(…….) charge and end at the (…….) charge.
24.	The electroscope consists of a metal disc, a glass container a(…….) rod and two (…….) leaves
25.	Forensic and criminal investigation experts use(…….) filings and a(…….) brush to reveal the unclear fingerprints
26.	When a magnet is suspended freely, its south pole points to the geographical (…….) pole of the Earth
27.	An (…….) force arises between the north pole of a magnet and the south pole of another magnet, while a (…….) force arises between the south pole of a magnet and the south pole of another magnet
28.	Magnetic field lines start from the(…….) pole and end at the(…….) pole
29.	(…….) field lines end at the metallic surfaces, while (…….) field lines penetrate delicate surfaces
30.	Black holes in the space are characterized by immense(…….) that even (…….) cannot escape from them
31.	The weakest field force in any atom is the gravitational force between (…….) And (…….)
32.	The(…….) of an objects does not change from one place to another, while the(…….) of an objects changes from one place to another
33.	Mass is measured in(…….) while weight is measured in (…….)
34.	The weights of objects become zero in (…….) while their (…….) remains constant
35.	From the cell organelles that found in all living cell is (…….)
36.	From cell organelles found in bacterial cells is (…….) while (…….) is a cell organelle found only in plant cells
37.	One of the organelles shared between bacterial and animal cells is (…….)
38.	Plant cells differ from animal cells in the presence of (…….) (…….) And (…….)
39.	Stem cells are found in multicellular organisms like (…….) And (…….)

40.	Examples of specialized cells resulting from the transformation of stem cells in human include nerve cells (……) , (……) and (……)
41.	Autotrophic organisms are called (……) while heterotrophic organisms are called (……)
42.	(……) from autotrophic prokaryotes
43.	From producers that belong to eukaryotic organisms(……) and (……), while (……) and (……) are from consumers
44.	Green leaves contain (……) That are responsible for absorbing (……)
45.	In the photosynthesis, green leaves absorb (……) and (……) , while roots absorb (……) and (……)
46.	Form inorganic substances that used in photosynthesis are (……) , (……) and (……)
47.	The microbe that causes amoebic dysentery disease is (……) , while the microbe that causes typhoid fever disease is (……)
48.	Symptoms of dysentery disease include (Repeated bloody diarrhea) , (stomach pain) And (……)
49.	Bacterial diseases that affect humans include (……) , (……) And (……)
50.	Symptoms of typhoid disease include (……) , (……) , (……) and flatulence in addition to stomach and muscle pain
51.	Symptoms that are common in both dysentery and typhoid disease are (……) and (……)
52.	Dysentery disease is transmitted through (……) while typhoid fever is transmitted through (……)
53.	(……) And (……) have many active volcanoes
54.	(……) And (……) have no crust and are composed only of gases
55.	The (Inner) planets are all rocky planets, while the (……) planets are gaseous planets
56.	(……) is known as the red planet, while (……) is known as the blue planet
57.	The apparent motion of the Sun occurs due to the rotation of (……) around (……)

58.	The apparent height of the Sun is(…….)in summer, while it is (…….) in winter	
59.	The apparent level of the Sun gradually rises between (…….) and (…….)	
60.	When the side of the moon facing Earth is fully illuminated, it is called (…….) while it is called (…….) when it is completely dark	
61.	The full moon phase occurs between the(…….) and (…….) phases, while the new moon phase occurs between the (…….) and (…….) phases	
62.	(…….) objects allow light to pass through them, while (…….) objects do not allow light to pass through them	
63.	When an opaque object is placed in the path of light rays, two areas are formed on a screen placed in front of it, which are (…….) and (…….)	
64.	The shadow area increases when the opaque object(…….) to (…….) and decreases when it(…….)	

Question 4 Write the scientific term

1.	**Any thing that has mass and volume, and occupies space**	……
2.	**The building unit of the matter**	……
3.	**The first scientific theory about the atom**	……
4.	**the first model of the atom based on experimental basis**	……
5.	**Positively charged Particles located inside the nucleus**	……
6.	**Particles its mass can be neglected while its charge can't**	……
7.	**A subatomic Particle whose charge can be neglected, but its mass cannot be neglected**	……
8.	**compounds used in improving agricultural - productivity**	……
9.	**An element necessary for greening of Plant leaves**	……
10.	**An element necessary for strengthening roots**	……
11.	**An element necessary for healthy Plant growth**	……
12.	**Regions where electrons revolve around The nucleus according to their energy**	……
13.	**A number written at lower left side of -an element's symbol**	……
14.	**A number written at top left side of an elements symbol**	……
15.	**The sum of the number of protons and neutrons that compose the nucleus atom**	……
16.	**The difference between the mass number and atomic number**	……
17.	**Different Forms of the same element's atoms that have the same atomic number but differ in mass number**	……

18.	The isotope of hydrogen with no neutrons in its nucleus	.....
19.	the isotope of hydrogen has one proton and one neutron in its nucleus	.....
20.	the isotope of hydrogen has one proton -and two neutron in it's nucleus	.....
21.	A table in which elements are arranged in ascending order based on their atomic masses	.....
22.	the first true Periodic table for classifying elements	.....
23.	The horizontal rows in the modern Periodic table	.....
24.	The vertical Columns in the modern periodic table	.....
25.	Elements whose electron Configurations end with 5, for 7 electrons	.....
26.	the block to which halogens belong	.....
27.	The only metalloid in the 3rd Period of the modern periodic table	.....
28.	The only liquid metal in the modern Periodic table	.....
29.	The last group in P-block	.....
30.	the dot representation of valence electrons around the symbol of an element	.....
31.	the number of unpaired electrons in the Lewis structure of an element	.....
32.	substances composed of two or more materials that are not Chemically combined and their components can be separated by Physical method	.....
33.	Mixtures whose components can be distinguished by the naked eye	.....
34.	Substances whose components cannot be separated by the physical method	.....
35.	A molecule that contains one type of identical Atoms	.....
36.	A Pure substance formed by the chemical Combination of two or more elements in -a Fixed mass ratio	.....
37.	A dye used by the Ancient Egyptians to Colour Papyri and statues	.....
38.	Properties of a substance that can be observed and measured in some cases	.....
39.	A Physical property used to distinguish between materials that float on the surface of water and those that sink in it	.....
40.	A transparent, low density material, where 99.8% of its composition is of air only	.....

41.	An alloy lighter than aluminum alone and retains its strength at high temperature	.....
42.	Elements that are stable due to that their outer most energy levels are completely filled with electrons	.....
43.	A metal atom that has lost one or more electrons	.....
44.	Anon metal atom that has gained one or more electrons	.....
45.	The chemical bonding that arises between a metal atom and another nonmetal atom	.....
46.	The bond which is formed of a pair of electrons in which each atom shares its Single (un Paired) Valance electron	.....
47.	The bond which is formed of two Pairs of electrons in which each atom shares its two unpaired valance electron	.....
48.	The bond which is formed of three Pairs of electrons in which each atom shares it's three un Paired valence electrons	.....
49.	The simplest organic compound where one carbon atom is bonded to four hydrogen atoms	.....
50.	Compounds, most of them do not dissolve in Water and have low melting and boiling Points	.....
51.	Electrical charges accumulated on the surfaces of objects when they are lost or gained. for electrons ()	.....
52.	Arrangement of some materials according to how easily they lose electrons.	.....
53.	The device used to measure weak electric charges	.....
54.	System used to protect buildings and constructions from lightning strikes	.....
55.	The area surrounding electric charges where their effect is appeared without contact.	.....
56.	Imaginary lines showing the path taken by a small, freely moving positive charge placed in it	.....
57.	Device used to determine the type of electric charge	.....
58.	The materials on which electric charges accumulate, provided that the charged part of them is insulated.	.....
59.	The process of charging two uncharged objects by rubbing them together	.....
60.	The charges formed on the object that loses electrons when rubbed	.....

61.	The charges formed on the object that gains electrons when rubbed	.....
62.	Subatomic particles which are deflected towards the negative plate when they pass through an electric field	.....
63.	The process of charging an uncharged object by another charged object due to their contact,	.....
64.	A natural stone that has the ability to attract objects made of iron	.....
65.	Materials that are not attracted to the magnet	.....
66.	Materials that are attracted to the magnet	.....
67.	An ancient tool used to determine the four geographical directions	.....
68.	Similar poles repel and different poles attract.	.....
69.	The area surrounding the magnet where the effects of its magnetic force appear	.....
70.	Imaginary lines representing the strength of the magnetic field	.....
71.	The geographical pole of the Earth that the north pole of a freely-suspended magnet points to.	.....
72.	The mutual magnetic force between a magnet and a magnetic material within its field	.....
73.	The force which is responsible for the stability of the objects and rainfall on the surface of the earth.	.....
74.	A natural phenomenon that occurs due to the gravitational force between the moon and the Earth.	.....
75.	Regions in the space formed due to the collapse of a massive star at the end of its life.	.....
76.	The mutual force between the masses of two object's materials .	.....
77.	Earth's gravitational pull on an object	.....
78.	the space in which the Earth's gravitational force affects material objects, with an attraction force towards the center of the Earth.	.....
79.	The amount of matter an object contains.	.....
80.	The rotation of any object in space around another central object in a curved path due to the gravitational attraction force between them.	.....
81.	Forces that act on objects when they are in contact with each other.	.....
82.	Forces that act on objects within their field at a certain distance without contact.	.....
83.	The smallest structural unit in the human body	.....

84.	**Living organisms whose bodies are formed of differentiated and specialized cells.**	**……**
85.	**Unique organelles present in plant cell only.**	**……**
86.	**A cell organelle that distinguish an animal cell from the plant cell.**	**……**
87.	**Cell organelles shared by both prokaryotes and eukaryotes cells.**	**……**
88.	**Undifferentiated cells that have the ability to be transformed and differentiated into all the differentiated cells of the body.**	**……**
89.	**Living organisms that can make their own food through photosynthesis.**	**……**
90.	**Living organisms that depending directly or indirectly on other producers to obtain their food**	**……**
91.	**A biological process in which substances are produced that are used in building their bodies**	**……**
92.	**Organelles responsible for the occurrence of photosynthesis in plants**	**……**
93.	**The substance responsible for absorbing light energy in plants**	**……**
94.	**The substance that the plant produces as food and from which it obtains energy.**	**……**
95.	**A technological method that mimics photosynthesis to produce environmentally friendly fuel.**	**……**
96.	**A phenomenon resulting from the increase in the percentage of carbon dioxide gas in the atmosphere**	**……**
97.	**The process by which a living organism obtains oxygen from the atmospheric air and gets rid of carbon dioxide gas.**	**……**
98.	**Microscopic organisms that may be beneficial or harmful to other living organisms**	**……**
99.	**Living organisms that spread in water, soil, air and inside our bodies.**	**……**
100.	**An element involved in producing proteins which are necessary for the growth of plant cells and tissues**	**……**
101.	**Plants that are unable to utilize nitrogen from the air or soil in its gaseous form.**	**……**
102.	**A type of bacteria that lives inside nodules found on the roots of certain plants**	**……**
103.	**A type of bacteria that provides nitrogen to the bean plant in the form of usable compounds.**	**……**
104.	**A type of bacteria that increases soil fertility and maintains the cycle of elements in nature**	**……**

105.	Special structures found on the roots of certain plants in which a specific type of bacteria lives	.....
106.	A food product rich in protein and calcium	.....
107.	Bacteria that convert lactose in milk into the acid found in yogurt.	.....
108.	An acid that gives yogurt its distinctive taste and thickness.	.....
109.	A fungus responsible for the distinctive taste and various colors of Roquefort cheese	.....
110.	A Scottish scientist who won the Nobel Prize in Medicine in 1945	.....
111.	A scientist famous for discovering the first effective antibiotic	.....
112.	The first antibiotic to be extracted from a fungus.	.....
113.	The fungus from which penicillin was first extracted	.....
114.	A fungus used in making bread and ethyl alcohol production	.....
115.	A unicellular protozoan that causes dysentery disease in human.	.....
116.	A star which 8 planets orbit (revolve around) in elliptical paths	.....
117.	Rocky planets with solid surfaces	.....
118.	Gaseous planets with no volcanoes	.....
119.	An imaginary straight line extending from the North Pole to the South Pole passing through Earth's center	.....
120.	The appearance of the sun in the sky throughout the day or the year as if its position is shifting from east to west while the Earth rotates around its own axis	.....
121.	An ancient solar clock used to determine time based on the length and direction of the shadow resulting from the apparent motion of the Sun	.....
122.	An opaque body orbiting the Earth and is the closest celestial body to it.	.....
123.	An opaque body reflecting sunlight and completes its orbit around the Earth takes 29.5 days	.....
124.	The different stages that the moon goes through during its orbit around the Earth	.....
125.	The phase of the moon at the beginning of each arabic month	.....
126.	The phase in which the right half of the moon's side is illuminated	.....
127.	The phase of the moon on the 11^{th} day of the arabic month	.....
128.	The phase of the moon in the middle of the lunar month	.....
129.	The phase in which three-quarters of the left part of the moon's side is illuminated	.....
130.	The phase of the moon at the end of the third week of the lunar month.	.....

131.	The phase of the moon on the 26th day of the arabic month.	.....
132.	The phase in which the moon is completely dark.	.....
133.	The phase of the moon at the end of the lunar month	.....
134.	A phenomenon that occurs once or twice a year during the full moon phase, where the moon disappears gradually out of sight	.....
135.	The dark area that does not receive light as the result of the presence of an opaque object in the path of light	.....

Question 5 Give reason for:

1. The nucleus of the atom is described as positively charged.
   - .....
2. The mass of the atom is concentrated in the nucleus
   - .....
3. The symbol of potassium is K not P as expected.
   - .....
4. NPK is one of the most important types of agricultural fertilizers.
   - .....
5. It is advised not to excessively use of agricultural fertilizers.
   - .....
6. The energy of the electron differs in the different energy levels
   - .....
7. The energy level L is filled with electrons before the energy level M
   - .....
8. The third energy level is saturated with 18 e^-
   - .....
9. Carbon atom is electrically neutral in its normal state
   - .....
10. The mass number is usually greater than the atomic number.
    - .....
11. The atoms of the isotopes of the same element have the same atomic number different mass number.
    - .....
12. The number of neutrons in the nucleus of an isotope atom cannot be determine by knowing its mass number only.
    - .....
13. The atomic number equals the mass number for protium.
    - .....

14. Protium, deuterium and tritium are isotopes of the same element.
    - .....
15. The scientists have made several attempts to classify elements.
    - .....
16. Moseley rearranged elements in his periodic table in ascending order according to their atomic numbers.
    - .....
17. Sodium, $_{11}Na$ belongs to the alkali metals group
    - .....
18. It is difficult to identify metalloids based on their electron configurations.
    - .....
19. Potassium element, $_{19}K$ is located in period 4, group 1A in the modern periodic table
    - .....
20. Both elements $_{13}Al$ and $_{17}Cl$ are located in the same period in the modern periodic table
    - .....
21. Helium element, $_{2}He$ is located in group zero, not in group 2A
    - .....
22. Elements of the same group in the modern periodic table have similar chemical properties
    - .....
23. The valency of each of boron $_{5}B$ and nitrogen $_{7}N$ is trivalent
    - .....
24. Halogens are monovalent nonmetals
    - .....
25. The valency of any inert gas is zero.
    - .....
26. Scientists cannot discover a new element between sulphur $_{16}S$ and chlorine $_{17}Cl$ in the modern periodic table
    - .....
27. Potassium is a solid element at room temperature
    - .....
28. Chlorine is a gaseous element at room temperature
    - .....
29. Table salt in water is a homogeneous mixture, while sand in water mixture is a heterogeneous mixture
    - .....

30. Both hydrogen gas and nitric acid are pure substances
- .....

31. Water molecule is a compound molecule, while oxygen molecule is an element molecule
- .....
- .....

32. Methane molecule is an organic compound molecule.
- .....

33. Organic compounds are known as carbon compounds
- .....

34. Viscosity is a physical property
- .....

35. It is easier to stir water than honey
- .....

36. Cork floats on the surface of water, while iron sinks in it.
- .....

37. Aerogel is used to make jackets for the researchers in cold regions
- .....

38. Flammability is a chemical property of a substance
- .....

39. Helium gas is used to fill balloons
- .....

40. Nitrogen is used to fill car tires instead of air
- .....

41. The stability of the noble gas atoms according to their electron configuration.
- .....

42. Argon element cannot form a positive ion or a negative ion under normal conditions
- .....

43. Nonmetal atoms tend to gain or share electrons to form chemical bonds.
- .....

44. Metal atoms tend to lose their valence electrons.
- .....

45. Aluminum atom forms a positive ion, while chlorine atom forms a negative ion
- .....

46. A magnesium ion carries two positive charges.
- .....

47. A nonmetal atom converts into a negative ion when it gains one or more electrons
    - .....

48. Potassium element $_{19}K$ tends to bind to chlorine element $_{17}Cl$ with an ionic bond
    - .....
      .....

49. The number of electrons in the ion of each of fluorine $_{9}F$ and sodium, $_{11}Na$ in sodium fluoride molecule is equal.
    - .....
      .....

50. The ionic compound is electrically neutral.
    - .....

51. Hearing crackling sound when taking off woolen clothes in winter.
    - .....

52. You feel a slight electric shock when you touch metal handle after walking barefoot on the carpet
    - .....

53. The attraction of paper pieces to an ebonite rod rubbed with wool
    - .....

54. When an ebonite rod is rubbed with cotton, cotton acquires a positive charge, while ebonite acquires a negative charge
    - .....

55. The type of electric charge generated on an ebonite rod differs from that generated on a glass rod after each of them is rubbed separately with silk
    - .....

56. The type of charge generated on each of the dry silk and a glass rod differs after they are rubbed together
    - .....
    - .....

57. Paper pieces are attracted to a wooden rod after each of them is rubbed with silk
    - .....

58. Two pieces of silk repel each other after each of them is rubbed separately with cotton
    - .....

59. Neutrons are not deflected when they pass through an electric field.
    - .....

60. Both iron and steel are magnetic materials.
    - .....

61. Copper and gold are non-magnetic materials.
- .....

62. Not all metals are magnetic materials
- .....

63. Forensic experts use a magnetic brush and iron filings to reveal the unclear fingerprints
- .....

64. The density of iron filings increases at the poles of the magnet
- .....

65. A magnet always takes a certain direction when it is suspended freely.
- .....
- .....
- .....

66. The magnetic needle of a compass is placed inside a copper box.
- .....

67. The compass box is not made of iron.
- .....

68. Collision forces are contact forces, while Earth's gravitational force is a field force
- .....
- .....

69. The rainfall and the falling of the objects towards the Earth.
- .....

70. The occurrence of tides phenomenon in the seas and oceans
- .....

71. The state of the sea differs when the moon is in the crescent phase compared to its state during the new moon and full moon phases
- .....

72. The formation of black holes in the space
- .....

73. The moon's orbital motion around the earth.
- .....

74. The concept of mass differs from the concept of weight.
- .....

75. The cell is the basic unit of function in living organisms.
- .....

76. The importance of classifying living organisms into groups based on scientific principles.
- .....

77. Amoeba is unspecialized
- .....

78. Food is an essential element for the life of living organisms.
- .....

79. Clover is an autotrophic organism
- .....

80. The camel is a heterotrophic organism
- .....

81. Cattle are considered consumers.
- .....

82. Artificial photosynthesis plays an important role in protecting the environment
- .....

83. Yogurt is important for human, especially children
- .....

84. Milk is boiled thoroughly for a sufficient period during making yogurt
- .....

85. The variation in the length of a shadow cast by an object throughout the day.
- .....

86. The length of a shadow during the day in summer is shorter than its length during the day in winter at the same time of the day.
- .....

87. The length of a shadow at noon is the shortest.
- .....

88. The alternation of the four seasons
- .....

89. The variation in the number of daylight and nighttime hours.
- .....

90. Winter begins on December 22nd, while summer begins on June 21st
- .....

91. The periods of March 21st and September 23rd are called the two equinoxes
- .....

92. The moon is called the first quarter at the end of the first week of the arabic month
- .....

93. The moon is called the first quarter at the end of the first week of the arabic month
- .....

94. The moon undergoes the crescent phase twice during the lunar month, while the full moon occurs once.
- .....

95. The moon cannot be seen during the new moon phase
- .....

96. The moon cannot be seen at the end of the lunar month
- .....

97. A shadow is formed for an opaque object when placed in the path of light rays, while no shadow is formed for a transparent object.
- .....

98. Although an object is in the path of light rays, no shadow is formed on the screen placed in front of it.
- .....

99. A lunar eclipse can be either total or partial eclipse.
- .....

Question 6 Compare between each of the following

1. Electron and proton "In terms of: Relative electric charge - Position in the atom – Mass

(1)	Electron	Proton
Relative electric charge	.....	.....
Position in atom	.....	.....
Mass	.....	.....

2. Phosphorus and Potassium "In terms of: Chemical symbol - Importance".

(2)	Phosphorus element	Potassium element
Chemical symbol	.....	.....
Importance	.....	.....

3. Energy level (L) and energy level (M) "In terms of: Energy level number - Number of electrons it can saturated with".

(3)	Energy level L	Energy level M
Energy level number	.....	.....
Number of saturated electrons	.....	.....

4. Atom of $^{27}_{13}X$ and atom of $^{32}_{16}Y$ "In terms of: Number of protons – Number of electrons Number of neutrons - Atomic number - Number of nucleons - Electron configuration".

(4)	$^{27}_{13}X$	$^{32}_{16}Y$
Number of protons	.....	.....
Number of electrons	.....	.....
Number of neutrons	.....	.....
Atomic number	.....	.....
Number of nucleons	.....	.....
Electron configuration		

5. $^{1}_{1}H$, $^{2}_{1}H$ and $^{3}_{1}H$ terms of: Isotope name - Atomic number - Number of neutrons".

(5)	$^{1}_{1}H$	$^{2}_{1}H$	$^{3}_{1}H$
Istope name	.....	.....	.....
Atomic number	.....	.....	.....
Number of neutrons	.....	.....	.....

6. Isotope $^{14}_{6}C$ and isotope $^{18}_{9}F$ "In terms of: Atomic number - Number of nucleons"

(6)	Isotope $^{14}_{6}C$	Isotope $^{18}_{9}F$
Atomic number	.....	.....
Number of nucleons	.....	.....

7. (s)-block and (p)-block (In terms of: Location in the modern periodic table Number of groups - Types of elements).

(7)	s-block	p-block
Location	.....	.....
Number of groups	.....	.....
Types of elements	.....	.....

8. Alkali metals group and halogens group (In terms of: Group number - Their block Number of last energy level electrons - Examples of their elements)

(8)	s-block	p-block
Group number	.....	.....
Block	.....	.....
Number of last energy level electrons	.....	.....
Examples of elements	.....	.....

9. Group 2A and group zero in the modern periodic table (In terms of: Group natt - their block - Number of last energy level electrons - Examples).

(9)	Group 2A	Group 0
Group name	.....	.....
Block	.....	.....
Number of last energy level electrons	.....	.....
Examples	.....	.....

10. Mercury and Bromine (In terms of: Chemical symbol - Physical state - Type of element).

(10)	Mercury	Bromine
Chemical symbol	.....	.....
Physical state	.....	.....
Element type	.....	.....

11. Element $_{20}Y$ and element $_{10}X$ (In terms of: Electron configuration - Group 10 number - Period number - The block they belong to).

(11)	$_{20}Y$	$_{10}X$
Electron configuration	.....	.....
Group number	.....	.....
Period number	.....	.....
Block	.....	.....

12. Element $_{17}X$ and element $_{19}Y$ (In terms of: Location in the periodic table - Grout 19 name - Lewis dot structure - Valency).

(12)	$_{17}X$	$_{19}Y$
Location in the periodic table	.....	.....
Group name	.....	.....
Lewis structure	.....	.....
Valency	.....	.....

13. Fluorine and Cesium (In terms of: Location in the periodic table - Chemical activity).

(13)	Fluorine	Cesium
Location in the periodic table	.....	.....
Chemical activity	.....	.....

14. The elements, $_{11}Na$ and $_{9}F$ "In terms of: Type of element - Type of the formed ion - Ion symbol".

(14)	$_{11}Na$	$_{9}F$
Element type	.....	.....
Type of formed ion	.....	.....
Ion symbol	.....	.....

15. Hydrogen molecule, oxygen molecule and nitrogen molecule "In terms of: The type of covalent bond in each molecule".

(15)	Hydrogen molecule	Oxygen molecule	Nitrogen molecule
Covalent bond type	.....	.....	.....

16. Conducting and nonconducting materials

(16)	Conducting materials	Non-conducting materials
Definition	.....	.....
Example	•	• .....

17. Electric attraction force and electric repulsion force

(17)	Electrostatic attraction force	Electrostatic repulsion force
	.....	.....

18. Charging by friction (rubbing) and charging by contact

(18)	Charging by friction (rubbing)	Charging by contact
	.....	.....

19. Electric field and magnetic field

(19)	Electric field	Magnetic field
	....	....
	....	....

20. Electric field lines and magnetic field lines

(20)	Electric field lines	Magnetic field lines
	.....	.....
	.....	.....
	.....	.....

21. Gravitational forces and friction forces (In terms of: The existence of a field).

(21) Point of comparison	Point of comparison	Friction forces
Existence of a field	.....	.....

22. Gravitational forces and collision forces (In terms of: The type).

(22) Point of comparison	Gravitational forces	Collision forces
The forces type	.....	.....

23. The phenomenon of tides and the phenomenon of black holes (In terms of: The cause of each).

(23) Point of comparison	Phenomenon of tides	Phenomenon of black holes
Cause	.....	.....

24. System and organ

(24)	System	Organ
	.....	.....

25. Organ and tissue

(25)	Organ	Tissue
	.....	.....

26. Amoeba and bacteria (In terms of: The presence of genetic material).

(26) Point of comparison	Amoeba	Bacteria
The presence of genetic material	.....	.....

27. Yeast fungus and mushroom fungus (In terms of: The number of cells - Nucleus structure).

(27) Points of comparison	Yeast fungus	Mushroom
The number of cells	.....	.....
Nucleus structure	.....	.....

28. Corn and human (In terms of: Nutrition pattern).

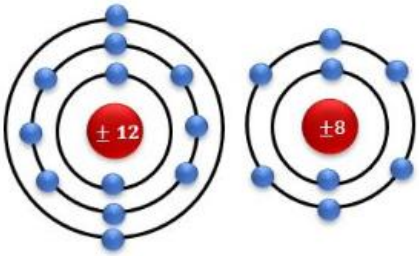
(28)	Corn plant	Human
	.....	.....

29. Photosynthesis and cellular respiration (In terms of: Input substances – Output substances - Reaction equation).

(29) Points of comparison	Photosynthesis	Cellular respiration
Involved substances	.....	.....
Produced substances	.....	.....
The reaction equation	.....	.....

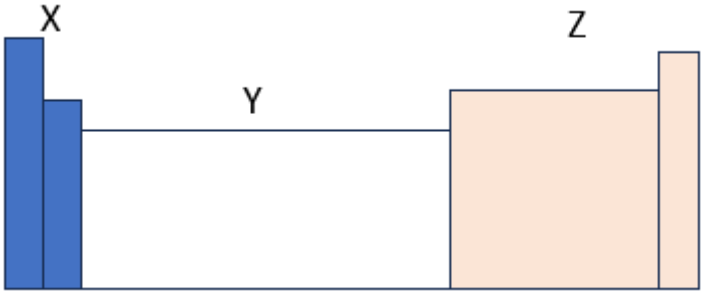
Question 7 various questionthe scientific term

1. Study the two opposite figures, then conclude:



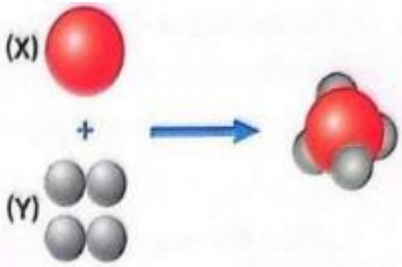
1) The atomic number of each atom.
……..
2) The mass number of each atom
……

2. Study the following figures, then answer the questions



1) The opposite figure: represents a section in the modern periodic table
   - What are the names of the element blocks indicated by the letters (X), (Y) and (Z)?
     - ……
   - How many groups are in each block
     - ……

3. The opposite figure shows the combination of one molecule of element (X) with two molecules of element (Y) to form one methane molecule:



(1) What is element (X)? State its block in the periodic table.
- ……..

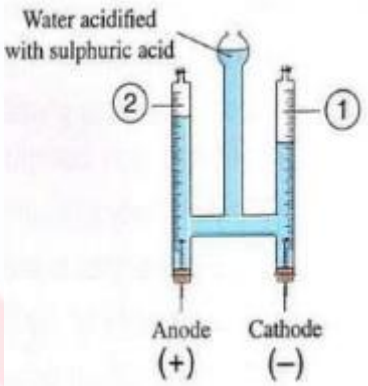
(2) Determine: :

1- The physical state of element (X) and molecule (Y).
- ……..

2- The type of the formed compound, with explanation
- ……
  ……

4. From the opposite figure

(1) What is the name of the device shown in the figure? What is its use?



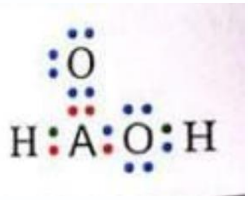
- .....
- .....
- .....

(2) Write the items indicated by the numbers 1 and 2.

1. .....
2. .....

5. From the opposite figure

(1) Determine the atomic number of element A, knowing that it is located in the 2nd period



- .....
- .....

(2) Determine the type of the bonding in this compound

- .....
  .....

(3) Is this compound an organic compound? Explain the reason

- .....
  .....

6. The opposite figure shows an electroscope after the body (X) has touched its metal disc

(1) What is the charge of body (X).

- .....

(2) What happens when

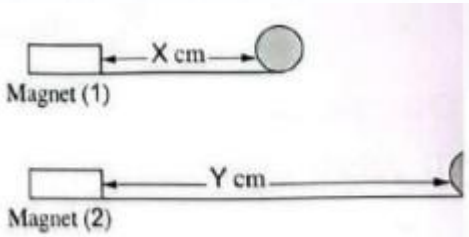
(1) positively charged object is brought close to the electroscope disc.

- .....

(2) A negatively charged object is brought close to the electroscope disc

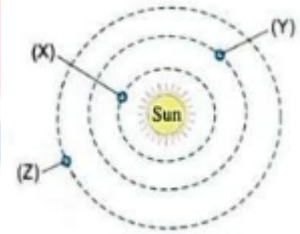
- .....
  .....

7. **In the opposite figure, magnet (1) can attract a nickel disc at a distance of X cm, while magnet (2) can attract the same disc at a distance of Y cm Which magnet is stronger? Explain**



- .....
- .....
- .....

8. **The opposite figure represents the orbits of some planets around the Sun**



(1) What are the two factors affecting the gravitational force between the Sun and planet (X)?

- .....
- .....
- .....

(2) Assuming the mass of planet (Y) equals the mass of planet (Z), Which planet has a stronger gravitational force with the Sun? Explain.

- .....
  .....
  .....

9. **The opposite figure represents the structure of a plant cell.**

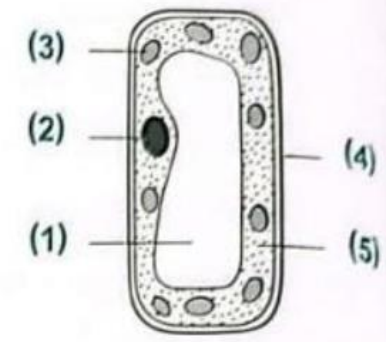
Write the number indicating:

(1) A structure that is unique to the plant cell.

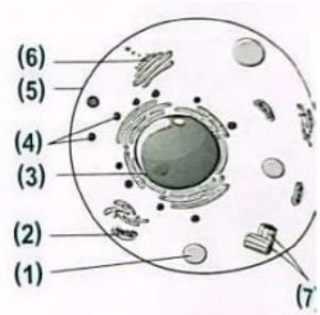
(2) A structure that is shared with bacterial cell.

(3) A structure that is shared with both animal and bacterial cells

(4) A structure whose size differs compared to that of the animal cell.



10. The opposite figure represents the structure of an animal cell Write the number indicating:



(1) A structure unique to the animal cell

……

(2) Organelles shared with both plant and bacterial cells

……

(3) A structure absent in bacterial cells

……

11. The opposite figure shows one of the devices used in hospitals

(1) What is the name of this device, and what is its function

……

(2) What is the organ does this device mimic its function?

……..

12. The opposite figure shows one of the technological methods recently developed by human:

(1) What is the name of the technological method shown in the figure, and which vital process does it mimics?

- ……

(2) Write what the symbol (X) represents.

- ……

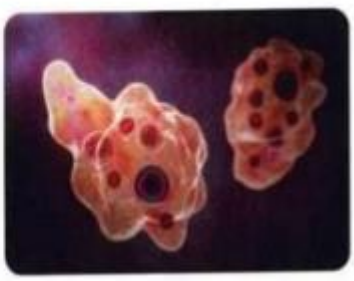
(3) What are the substances needed for this technological method to do its function

- ……

(4) What impact does this technological method have on the environment?

- ……

13. The two opposite figures show two harmful microbes to human health



(1) What are the names of the microbes (1) and (2)?

- ……..
- ……...

(2) Classify each microbe individually based on what you have studied

- ……
- ……

(3) What is the disease which is caused by each microbe?
Explain
1- How each of them is transmitted to humans
2- Symptoms of the disease caused by each of them
3- How to treat the disease caused by each of them.

- .....
- .....

14. Study the opposite diagram that shows an old tool, and answer the following

a. What is the name of the tool?
b. Mention the use of this tool.

- .....
- .....

15. Study the following figures, then answer the questions

(1) The opposite figure represents the different phases of the moon
1- Arrange these phases according to their succession of appearance from the beginning of the lunar month.

- .....

2- What is the name of the moon phase in each of these shown cases

- .....
- .....
- .....
- .....

Pilot test (1)

(A) Complete the following sentences

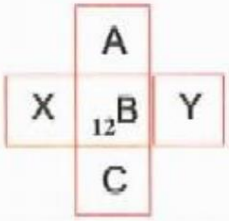
(1) Period 5 in the periodic table ends with an element from the(……..) and is preceded by an element from the (……..)

(2) (……..) can be separated by physical methods, while (……..) can be separated by chemical methods.

(3) A nonmetal element that has the ability to conduct electricity is (……..)

(4) (…….) are not surrounded by a nuclear membrane in the cells of (……. (……..)

(B) The opposite figure shows a section of the modern periodic table:



(1) What is the atomic number of elements (X) and (Y)?

- ……

(2) What is the period number of element (A) and the group number of element (C)?

- ……

(C)What is the result of each of the following

(1) Not keeping yogurt in the fridge.

- ……

(2) Adding Penicillium Notatum to a bacterial culture.

- ……

(3) Moving upwards from the surface of the Earth. (in terms of Earth's gravitational field intensity).

- ……

(A) Choose the correct answer:

(1) Which of the following represents the electron configuration of an element whose molecule is composed of two atoms ?

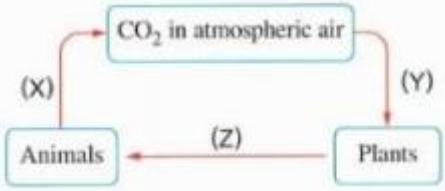
(a) 2,8,7 (b) 2,8,1

(c) 2,8,8 (d) 2,2

(2) Which of the following represents the electric field between two charged points?

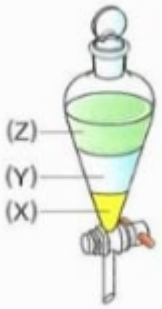
(a) (b) (c) (d)

(3) From the opposite figure:
Which of the following represents the vital processes (X), (Y) and (Z) in this diagram?



Choices	(X)	(Y)	(Z)
(a)	Respiration	Photosynthesis	Transport
(b)	Excretion	Respiration	Nutrition
(c)	Excretion	Photosynthesis	Respiration
(d)	Respiration	Transport	Nutrition

(4) In three experiments conducted as follows:
• Experiment 1: Liquid (1) was added to liquid (2), and liquid (1) floated.
• Experiment 2: Liquid (2) was added to liquid (3), and liquid (2) floated.
• Experiment 3: All three liquids were added together, and the liquids settled in the order shown in the opposite figure.
Which of the following is correct?



Choices	Liquid (1)	Liquid (2)	Liquid (3)
(a)	(Y)	(X)	(Z)
(b)	(Z)	(Y)	(X)
(c)	(X)	(Y)	(Z)
(d)	(Y)	(Z)	(X)

(B) Write the scientific term for each of the following statements
(1) A subatomic particle whose charge can be neglected but whose mass cannot be ignored. (……..)
(2) A metalloid with the chemical symbol Si (……..)
(3) Earth's gravitational pull on an object (……..)
(C)Compare between dysentery and typhoid fever "in two points only".

Dysentery disease	Typhoid fever disease
Caused by Entamoeba Histolytica	Caused by Salmonella Typhi bacteria
Treated with antiprotozoal drug	Treated with antibiotics
(Or any other correct answer)	

(A) Choose the odd word out, then write the relation between the rest:
(1) Amoeba / Bacteria / Yeast / Bread mold.
- ……
(2) Saturn / Venus / Jupiter / Neptune.
- ……
(3) New moon / Waxing crescent / First quarter / Waxing gibbous
- ……
(B) What happens when:
(1) A magnet is divided into two parts.
- ……

(2) Moving from one group to the next in the same period (In terms of: Atomic number).

- ……

(3) An object leaves Earth's gravitational field to outer space (In terms of: Weight).

- ……

(C) The figure shows an electroscope after object (X) touched its metal disc:

(1) What is the charge of object (X)?

- ……

(2) What happens to the leaves of the electroscope when the metal disc is touched by hand?

- ……

Pilot test (2)

Question 1

Choose the correct answer

(1) Which of the following exists in the cells of both prokaryotes and eukaryotes?

(a) Plasma membrane (b) Nucleus
(c) Chloroplasts (d) Centrosome

(2) All the following chemical formulas are correct, except

(a) methane: CH (b) Egyptian blue dye: CaCuSO
(c) nitric acid: HNNO3 (d) ozone: O

(3)) From the opposite diagram, which represents a section of the periodic table, which two elements are in the same period?

(a) (X) and (E).
(b) (Y) and (R).
(c) X) and (Y).
(d) (W) and (Z).

(4) Tides are at their peak when the Moon is in the phase of

(a) first quarter (b) waxing crescent
(c) wanning gibbous (d) full moon

(B) Mark (✓) or (x) for each statement, with correction

(1) An oxygen atom binds with two hydrogen atoms in an ammonia molecule.

(2) Objects are weightless in outer space.

(3) Vitamin A regulates calcium and phosphorus levels in the blood.

Complete the following equation:

Glucose + ……→…….. + Water + Energy

Question 2

(A)Complete the following sentences:

(1) The element 19K is located in (……) period (……..) and group

(2) The full moon phase occurs between the (…….) phase and the (……..) phase.

(3) (…….) is an old tool used to determine the main geographical directions of Earth, while(…….) is an ancient tool used to determine the time by the length and direction of shadows.

(4) The only liquid nonmetal is(……)while the only liquid metal is(……)

(B)Choose the odd word (or phrase) out, and mention the relation between the rest:

(1) Melting point / Solubility in water / Rust / Density.

- ……

(2) Nickel / Copper / Iron / Cobalt.

- ……

(3) Protons / Orbits / Electrons / Neutrons.

- ……

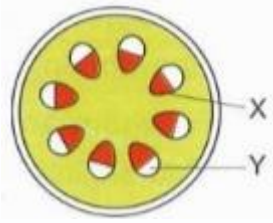
(4) Yeast fungus / Bread mold fungus / Mushroom fungus / Penicillium fungus

- ……

(C)A plant with white flowers had its roots placed in red-colored water for two days:

(1) What changes occurred after two days? (flower turn red)

(2) When the stem of the plant was cut transversely, it was observed that part (X) was colored red, while part (Y) was not. What are the names of (X) and (Y)



- ……..
- ……

Question 3

(A)Write the scientific term for each of the following statements:

(1) Pure substances that can be separated into their components by chemical methods. (……)

(2) The region surrounding a magnet where its magnetic force effect appears. (……)

(3) Unicellular organisms whose genetic material is found in the cytoplasm. (……)

(4) Compounds whose aqueous solutions conduct electricity. (……)

(B) Write the number of each of the following:

(1) Elements in the modern periodic table.

(2) The valency of the element: X:

(3) The number of tides times occur in a day

(C)If a body has a mass of 2 kg on Earth, what is its mass on the surface of the moon?

Question 1 Choose the correct answer

1.	(d)	2.	15 days	3.	full moon
4.	Earth being between the Sun and the moon	5.	the moon is in both Earth's shadow and penumbra	6.	there are volcanoes on both Earth and Uranus
7.	July	8.	2 pm	9.	the cast shadows in it are longer than in winter
10.	nucleus	11.	Unicellular bacterium	12.	lactic acid only
13.	(4)	14.	CO_2 gas and light energy.	15.	Glucose
16.	Hydrogen gas and CO_2	17.	Carbon dioxide gas	18.	Amoeba
19.	unspecialized	20.	Bread mold fungus	21.	Yeast
22.	most are unicellular	23.	Bacteria	24.	Eukaryote
25.	Both objects attract each other with the same force	26.	Gravity	27.	60kg , 598N
28.	(B)	29.	an attractive force arises between them	30.	Flexible
31.	metal nail.	32.	carbon	33.	(b)
34.	(c)	35.	(b)	36.	A_2B
37.	Covalent/Group 6A	38.	(d)	39.	produces gas bubbles with vinegar
40.	Sample (3)	41.	$_{17}Cl$ and $_{11}Na$	42.	10
43.	3	44.	9	45.	27
46.	$_{16}S$	47.	(b)	48.	Electron
49.	Each of neutron and proton	50.	$^{13}_{6}X$	51.	$^{3}_{1}X$
52.	second energy level	53.	New Moon	54.	Middle
55.	The moon	56.	Earth's penumbra	57.	8
58.	½	59.	the end of the Arab month	60.	Change in the area of the illuminated part of the moon
61.	equal to	62.	$_{8}O$	63.	Two single bonds
64.	single covalent	65.	$_{17}Cl$	66.	16 protons, 18 electrons
67.	Left	68.	left	69.	6
70.	P	71.	Inert gases		

Question 2 Mark (✓) or (✗) for each statement

1.	F	16.	T	31.	F
2.	F	17.	F	32.	T
3.	T	18.	F	33.	T
4.	F	19.	T	34.	F
5.	T	20.	F	35.	T
6.	T	21.	F	36.	T
7.	T	22.	F	37.	F
8.	T	23.	T	38.	F
9.	F	24.	T	39.	F
10.	T	25.	T	40.	F
11.	F	26.	F	41.	T
12.	T	27.	F	42.	F
13.	F	28.	F	43.	F
14.	T	29.	F	44.	F
15.	T	30.	T		

Question 3 Complete the following sentences:

1.	Calcium carbonate , atom	2.	Building , Structure	3.	Dalton , Rutherford
4.	Atomic mass , atomic number	5.	Atomic number , energy sublevels with electron	6.	Bromine , Fluorine , Chlorine
7.	5 , 6	8.	Metallic , nonmetaloid	9.	(S) , (P)
10.	Magnetic separation , filtration , evaporation and condensation	11.	Homogeneous , Heterogeneous	12.	Homogeneous , evaporation and condensation
13.	Heterogeneous , filtration	14.	(Ar_{18}) , (Ne_{10})	15.	Positive Ions , negative ions
16.	Single , double	17.	Ionic , Covalent	18.	Ionic , covalent
19.	Ionic , covalent	20.	Electrostatic plating	21.	Positive , negative
22.	Rubbing , contract	23.	Positive , negative	24.	Copper , gold
25.	Iron , magnetic	26.	South	27.	Attraction , reputation
28.	mercury	29.	Electric , magnetic	30.	Gravity , light
31.	Nucleus , electron	32.	Mass , weight	33.	Kilogram , newton
34.	out space , mass	35.	Ribosome	36.	Ribosome , Chloroplast
37.	Ribosome	38.	Chloroplast , large vacuole	39.	Higher animals , human
40.	Intestinal , (liver cells , muscle cells	41.	Produce , consumer	42.	some type of bacteria
43.	green algae , caw , human , plant	44.	Chlorophyll , light energy	45.	carbon dioxid , water , light energy , mineral salt

46.	Water , mineral salt , carbon dioxide	47.	Entamoeba histolytica , salmonella typhi bacteria	48.	Repeated bloody diarrhea , (stomach pain) And (lose appetite)
49.	Typhoid , nsilliti , diphtheria	50.	High fever , fatigue , headache	51.	Fatigue , stomach pain
52.	Eating food constamiting with Microbe , eating food constamiting with salmonella	53.	Venus , earth	54.	Uranus , Saturn
55.	Inner , outer	56.	Mars , Neptune	57.	Earth , axis
58.	Maximum , minimum	59.	Sunrise , noon	60.	Full Moon , New moon
61.	Waxing gibbous , winning Gibbous , waxing crescent) and (winning crescent)	62.	Transparent , Opaque	63.	Shadow , penumbra
64.	Approach , (light source) , (move away from the light source)				

Question 4 Write the scientific term

1.	matter	46.	Single covalent bond	91.	Nutrition
2.	atoms	47.	Double covalent bond	92.	Chloroplast
3.	Dalton	48.	Triple covalent bond	93.	Chlorophyll
4.	Rutherford	49.	methane	94.	Glucose
5.	protons	50.	Covalent compound	95.	Artificial photosynthesis
6.	electrons	51.	Static electricity	96.	Global warming phenomenon
7.	Neutrons	52.	(Electrostatic series)	97.	Gas exchange
8.	fertilizer	53.	(coulomb meter)	98.	Microbes
9.	Nitrogen	54.	(lightning rod)	99.	Microbes
10.	phosphorus	55.	(Electric field)	100.	Nitrogen
11.	potassium	56.	(Electric field lines)	101.	Legume plants
12.	energy levels	57.	(Electroscope)	102.	Nodular bacteria
13.	Atomic , number	58.	conductive materials	103.	Nodular bacteria
14.	mass number	59.	(Charging by rubbing)	104.	Decomposition bacteria
15.	mass	60.	(positive charges)	105.	Root nodules

	number				
16.	neutrons	61.	(Negative charges)	106.	Yogurt
17.	Isotopes	62.	(protons)	107.	Lactic acid bacteria
18.	protium	63.	(charging by contact)	108.	Lactic acid
19.	deutrrium	64.	(Lodestone)	109.	Penicillium Roqueforti fungus
20.	tritium	65.	(non magnetic materials)	110.	Alexander Fleming
21.	Mendeleev's table	66.	(magnetic materials)	111.	Alexander Fleming
22.	Mendeleev's table	67.	(compass)	112.	Penicillin
23.	period	68.	(law of attraction and repulsion)	113.	Penicillium Notatum fungus
24.	groups	69.	(magnetic field)	114.	Yeast fungus
25.	nonmetals	70.	(magnetic field lines)	115.	Entamoeba Histolytica
26.	p-block	71.	(The geographical north pole of the earth)	116.	The sun
27.	silicon	72.	(The attractive force)	117.	The inner planets
28.	bromine	73.	Earth's Gravitational force	118.	The outer planets
29.	Nobel gases	74.	Tidal phenomenon	119.	Earth's axis
30.	Lewis structure	75.	Black holes	120.	The apparent motion of the sun
31.	element valency	76.	Gravitational force	121.	The sundial
32.	mixtures	77.	. weight	122.	The moon
33.	heterogeneous	78.	Earth's Gravitational Field	123.	The moon
34.	pure substance	79.	Mass	124.	The phases of the moon
35.	element molecule	80.	Orbital motion	125.	Waxing Crescent Phase.
36.	compound	81.	Contact force	126.	First Quarter Phase
37.	Egyptian blue dye	82.	Field force	127.	Waxing Gibbous Phase
38.	physical properties	83.	. (cell)	128.	Full Moon Phase
39.	density	84.	Multicellular organisms	129.	Wanning Gibbous Phase
40.	Aerogel	85.	chloroplast and cell wall	130.	Last Quarter Phase
41.	Aluminum-titanium alloy	86.	Centrosome	131.	Wanning Crescent Phase
42.	Nobel	87.	Plasma membrane – cytoplasm – ribosomes	132.	New Moon Phase

	gases				
43.	positive ion	88.	stem cells	133.	New Moon Phase
44.	negative ion	89.	Autotrophic organisms (producera)	134.	Lunar eclipse
45.	ionic bonding	90.	Heterotrophic organisms (consumera)	135.	Shadow

Question 5 Give reason for:

1. Because they contain positive protons and neutral neutrons.
2. Because the mass of electrons is negligible compared to the mass of both protons and neutrons inside the nucleus.
3. Because when the English name of an element differs from its Latin name, it is symbolized according to its Latin name.
4. Because it contains nitrogen necessary for greening plant leaves, phosphorus for strengthening plant roots and potassium for healthy plant growth.
5. Because excessive use of fertilizers is harmful to plants, soil, human health, animals and the environment in general.
6. Because the energy of the electron increases as it moves farther from the nucleus, because the energy of the level in which it is found increases.
7. Because the energy of L level is less than that of M level.
8. Because according to the relations ($2n^2$), the number of electrons that saturate M level is $18 = 2 \times (3)^2 = 18$ electrons
9. Because the number of negative electrons orbiting the nucleus of carbon atom equals the number of positive protons inside the nucleus
10. Because the mass number equals the sum of the numbers of protons and neutrons in the nucleus, while the atomic number equals the number of protons only
11. They have the same atomic number because the number of protons in their nuclei is the same, but they differ in mass number due to the different number of neutrons in their nuclei.
12. Because the number of neutrons equals the difference between the mass number and the atomic number.
13. Because the nucleus of protium atom does not contain neutrons
14. Because they have the same atomic number but differ in mass numbers
15. To facilitate their study and conclude the relations between the elements and their physical and chemical properties.
16. Because he discovered that the periodicity of the properties of elements are related to their atomic numbers and not their atomic masses, as Mendeleev believed.
17. Because the last energy level in its atom contains one electron.
18. Due to the difference in the number of outermost energy level electrons in the atom of each of them.

19. Because its electrons revolve in 4 energy levels, and the last energy level in its atom contains only one electron.
20. Because the atom of each of them has the same number of energy levels occupied by electrons (3 energy levels).
21. Because it is an inert gas, the last energy level in its atom is completely filled with electrons.
22. Because their atoms have the same number of electrons in the last energy level.
23. Because Lewis structure of both boron and nitrogen contains three unpaired electrons.
24. Because Lewis structure of each of their atoms contains one unpaired electron
25. Because the last energy level is completely filled with electrons, thus Lewis structure does not contain any unpaired electrons.
26. Because the atomic number of the element is a whole number which increases from one element to the element following it in the same period by 1
27. Because both the melting and boiling points of potassium are higher than room temperature
28. Because both the melting and boiling points of chlorine are lower than room temperature.
29. Because the components of the table salt solution cannot be distinguished by the naked eye, while the components of the sand in water mixture can be distinguished by the naked eye.
30. Because both of them are substances whose components cannot be separated by physical methods.
31. Because the components of water molecule can be separated into oxygen and hydrogen by electrolysis, while an oxygen molecule cannot be dissociated into simpler forms either by physical or chemical methods.
32. Because it is formed by the combination of carbon and hydrogen elements.
33. Because carbon element is a main component in their structures.
34. Because it can be observed in liquid substances through their resistance to flow and the movement of objects through them.
35. Because water has lower viscosity than honey
36. Because the density of cork is less than that of water, while the density of iron is greater than that of water.
37. Because it is the lightest known solid material, characterized by excellent insulating properties and high durability.
38. Because it is one of the properties that only appear when a chemical reaction occurs, leading to a change in the form and composition of the substance.
39. Because its density is lower than that of atmospheric air and it is non-flammable
40. Because it is unaffected by temperature changes and does not react with rubber.
41. As their outermost energy levels are completely filled with electrons
42. Because their outermost energy levels are filled with 8 electrons.
43. To reach a stable electron configuration of the nearest noble gas in the periodic table.
44. To reach a stable electron configuration of the nearest noble gas in the periodic table.

45. Because aluminum is a metal, its atom tends to lose its valence electrons and becomes a positive ion, while chlorine is a nonmetal, its atom tends to gain electrons and becomes a negative ion.
46. Because the number of positive protons exceeds the number of negative electrons by 2
47. Because the number of negative electrons exceeds the number of positive protons by the number of gained electrons.
48. Because potassium atom tends to lose one electron from its last energy level, turning into a positive ion, while chlorine atom gains this electron, turning into a negative ion, which creats electrostatic attraction between the two ions, forming an ionic compound.
49. Because fluorine atom tends to gain one electron, turning into a negative ion, while sodium atom tends to lose its valence electron, turning into a positive ion, and thus both have the same number of electrons (10 electrons).
50. As the number of positive charges equals the number of negative charges in it
51. Because when the body is rubbed with woolen clothes, the electric charges found on the body are discharged
52. Because when the handle is touched, the charge generated on the body due to friction with the carpet is discharged
53. Because the rod gains electrostatic charges, giving it the ability to attract lightweight objects (as paper scraps)
54. Because cotton precedes ebonite in the electrostatic series, so it tends to lose electrons and becomes positively charged, while ebonite gains these electrons and becomes negatively charged.
55. Because rubbing the ebonite rod with silk gives ebonite a negative charge, while rubbing the glass rod with silk gives the glass a positive charge.
56. Because when the glass rod is rubbed with dry silk, electrons transfer from the glass rod to the silk, making the glass positively charged, while the silk gains a negative charge.
57. Because rubbing wood with silk gives the wood a positive charge, while rubbing paper with silk gives the paper a negative charge, and objects with opposite charges attract each other
58. Because rubbing silk with cotton gives the silk a positive charge, and objects with the same charge repel each other.
59. Because neutrons are electrically neutral.
60. Because iron and steel are attracted to the magnet
61. Because copper and gold are not attracted to the magnet
62. Because some metals like copper, gold and silver are not attracted to the magnet
63. Because some iron filings stick to the traces left by the fingerprints, making them visible.
64. Because the magnetic forces are the strongest at the poles of the magnet.
65. Because the Earth acts as a giant magnet that affects the freely suspended magnet, the north pole (N) of the magnet points to the geographic north pole of the Earth, while the south pole (S) of the magnet points to the geographic south pole of the Earth.

66. To prevent the attraction between the magnetic needle and the box material, which could affect on its movement.
67. To prevent the attraction between the magnetic needle and the box material, which could affect on its movement.
68. Because collision forces act on the objects when they come into contact with each other and do not have a field, while Earth's gravitational force affects objects that are within its field at a distance without contact.
69. Due to the presence of Earth's gravitational force.
70. Due to the gravitational attraction between the Moon and Earth.
71. Because tides are at their peak when the Moon is full or new.
72. Due to the collapse of a massive star at the end of its life.
73. Due to the gravitational attraction between them.
74. Because mass is the amount of matter that an object contains, while weight is the gravitational force that earth exerts on the object
75. Because the cell performs a variety of vital processes such as nutrition, growth and respiration
76. To facilitate their study and identification
77. Because Amoeba consists of a single cell that performs all the necessary vital processes to continuous its life
78. Because it is the main source of energy and produces substances used to build their body.
79. Because it can make its own food through the process of photosynthesis, which occurs in chloroplasts
80. Because it depends on other producers to obtain its food.
81. Because it depends on other producers to obtain its food.
82. Because they produce environmentally friendly fuel to reduce global warming
83. Because yogurt is rich in protein which is necessary for body building and muscle growth, and rich in calcium which is necessary for healthy bones and teeth.
84. To kill any bacteria present in the milk
85. Due to the apparent height of the sun changing throughout the day
86. Because the apparent height of the sun is at its maximum during summer and at its minimum during winter. As the sun's height increases, the shadow length decreases, and vice versa.
87. Because the apparent height of the sun is at its maximum at this time.
88. Due to Earth's orbit around the sun once every 365 $\frac{1}{4}$ days.
89. Due to the changing direction of Earth's axis tilt relative to the sun
90. Because on December 22$_{nd}$, the northern end of Earth's axis tilts away from the sun with an angle of 23.5°, while on June 21$_{st}$, the northern end tilts towards the sun with an angle of 23.5°
91. Because on both March 21st and September 23rd, Earth's northern axis is neither leaned close to nor away from the sun.
92. Because the moon completes a quarter of its orbit around Earth by the end of the first week of the lunar month.
93. Because the side of the moon facing Earth on the 14th day of the lunar month is fully illuminated.

94. Because at the beginning of the lunar month, the moon is in the first crescent phase, where a small portion of the right side of the moon is illuminated, and it increases throughout the month until fully illuminated in the full moon phase, then it gradually decreases from the right side until only a small portion of the left side is illuminated, known as the second crescent phase after the 26th day of the same month

95. Because the side of the moon facing Earth at the end of the lunar month is completely dark, known as the new moon phase.

96. Because the side of the moon facing Earth at the end of the lunar month is completely dark, known as the new moon phase.

97. Because opaque objects do not allow light to pass through, they cast a shadow, whereas transparent objects allow light to pass through, so they do not cast a shadow.

98. Because it is a transparent object, and transparent objects allow light to pass through, so they do not cast a shadow.

99. Because Earth, while orbiting the sun, falls on the line between the sun and the moon, completely or partially blocking sunlight from reaching the moon.

Question 6 Compare between each of the following

1. Electron and proton "In terms of: Relative electric charge - Position in the atom – Mass

(1)	Electron	Proton
Relative electric charge	-1	+1
Position in atom	It orbits the nucleus in the energy levels	Inside the nucleus
Mass	$\frac{1}{1836}u$	$1u$

2. Phosphorus and Potassium "In terms of: Chemical symbol - Importance".

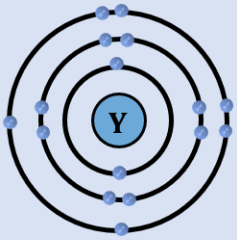
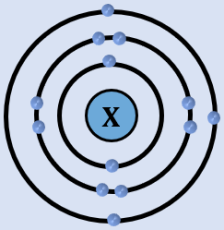
(2)	Phosphorus element	Potassium element
Chemical symbol	P	K
Importance	Necessary for strengthening plant roots	Necessary for healthy plant growth

3. Energy level (L) and energy level (M) "In terms of: Energy level number - Number of electrons it can saturated with".

(3)	Energy level L	Energy level M
Energy level number	Second	Third
Number of saturated electrons	8 electrons	18 electrons

4. Atom of $^{27}_{13}X$ and atom of $^{32}_{16}Y$ "In terms of: Number of protons – Number of electrons Number of neutrons - Atomic number - Number of nucleons - Electron configuration".

(4)	$^{27}_{13}X$	$^{32}_{16}Y$
Number of protons	13	16
Number of electrons	13	16
Number of neutrons	14	16
Atomic number	13	16
Number of nucleons	27	32

Electron configuration		

5. $^{1}_{1}H$, $^{2}_{1}H$ and $^{3}_{1}H$ terms of: Isotope name - Atomic number - Number of neutrons".

(5)	$^{1}_{1}H$	$^{2}_{1}H$	$^{3}_{1}H$
Istope name	Protium	Deuterium	Tritium
Atomic number	1	1	1
Number of neutrons	1 – 1 = 0	2 – 1 = 1	3 – 1 = 2

6. Isotope $^{14}_{6}C$and isotope $^{18}_{9}F$"In terms of: Atomic number - Number of nucleons"

(6)	Isotope $^{14}_{6}C$	Isotope $^{18}_{9}F$
Atomic number	6	9
Number of nucleons	14	18

7. (s)-block and (p)-block (In terms of: Location in the modern periodic table Number of groups - Types of elements).

(7)	s-block	p-block
Location	Occupies the left of the modern periodic table	Occupies the right of the modern periodic table
Number of groups	Consists of 2 groups (1A, 2A)	Consists of 6 groups (3A:0)
Types of elements	All elements are metals except hydrogen	Includes metals, nonmetals, motalloids and inert gases

8. Alkali metals group and halogens group (In terms of: Group number - Their block Number of last energy level electrons - Examples of their elements)

(8)	s-block	p-block
Group number	1A	7A
Block	S	P
Number of last energy level electrons	1 electron	7 electron
Examples of elements	Li , Na , K	F, Cl , Br

9. Group 2A and group zero in the modern periodic table (In terms of: Group natt - their block - Number of last energy level electrons - Examples).

(9)	Group 2A	Group 0
Group name	Alkaline Earth Metals	Inert Gases
Block	S	P
Number of last energy level electrons	2 electrons	8 electrons (except helium, which has 2 electrons)
Examples	Magnesium and calcium	Neon and helium

10. Mercury and Bromine (In terms of: Chemical symbol - Physical state - Type of element).

(10)	Mercury	Bromine
Chemical symbol	Hg	Br
Physical state	Liquid	Liquid
Element type	Metal	Nonmetal

11. Element $_{20}Y$ and element $_{10}X$ (In terms of: Electron configuration - Group 10 number - Period number - The block they belong to).

(11)	$_{20}Y$	$_{10}X$
Electron configuration	2, 8, 8, 2	2,8
Group number	2A	0
Period number	4	2
Block	S	p

12. Element $_{17}X$ and element $_{19}Y$ (In terms of: Location in the periodic table - Grout 19 name - Lewis dot structure - Valency).

(12)	$_{17}X$	$_{19}Y$
Location in the periodic table	Period 3 and group 7A	Period 4 and group 1A
Group name	Halogens	Alkali metals
Lewis structure		
Valency	Monovalent	Monovalent

13. Fluorine and Cesium (In terms of: Location in the periodic table - Chemical activity).

(13)	Fluorine	Cesium
Location in the periodic table	Period 2 and group 7A	Period 6 and group 1A
Chemical activity	Most active element in group 7A	Most active element in group 1A

14. The elements, $_{11}Na$ and $_{9}F$ "In terms of: Type of element - Type of the formed ion - Ion symbol".

(14)	$_{11}Na$	$_{9}F$
Element type	Metal	Nonmetal
Type of formed ion	Positive	Negative
Ion symbol	Na^+	F^-

15. Hydrogen molecule, oxygen molecule and nitrogen molecule "In terms of: The type of covalent bond in each molecule".

(15)	Hydrogen molecule	Oxygen molecule	Nitrogen molecule
Covalent bond type	Single	Doublo	Triple

16. Conducting and nonconducting materials

(16)	Conducting materials	Non-conducting materials
Definition	Materials on which electrostatic charges settle, provided that part of them is insulated	Materials on which electrostatic charges settle
Example	• Carbon. • - Metals such as Iron	• Wood. • Glass.

17. Electric attraction force and electric repulsion force

(17)	Electrostatic attraction force	Electrostatic repulsion force
	Force that arises between two objects charged with different electric charges	Force that arises between two objects charged with the same electric charge

18. Charging by friction (rubbing) and charging by contact

(18)	Charging by friction (rubbing)	Charging by contact
	The process of charging two uncharged objects by rubbing two objects together	The process of charging an uncharged object by its contact with another charged object

19. Electric field and magnetic field

(19)	Electric field	Magnetic field
	The region of space around an electric charge where its effect appears in it	The region of space around a magnet where the effect of its magnetic force appears in it.
	Represented by imaginary lines called electric field lines.	Represented by imaginary lines called magnetic field lines.

20. Electric field lines and magnetic field lines

(20)	Electric field lines	Magnetic field lines
	Imaginary lines that do not intersect each other	Imaginary lines that do not intersect each other.
	They start from the positive charge and end at the negative charge.	They start from the north pole of the magnet and end at the south pole of the magnet
	They end at the surfaces of charged objects and do not penetrate them	They are denser near the poles and far separated as they move away from them

21. Gravitational forces and friction forces (In terms of: The existence of a field).

(21) Point of comparison	Point of comparison	Friction forces
Existence of a field	It has a field	It has no field

22. Gravitational forces and collision forces (In terms of: The type).

(22) Point of comparison	Gravitational forces	Collision forces
The forces type	Field forces	Contact forces

23. The phenomenon of tides and the phenomenon of black holes (In terms of: The cause of each).

(23) Point of comparison	Phenomenon of tides	Phenomenon of black holes
Cause	Happen due to the gravitational force between Moon and Earth	Happen due to the collapse of massive star at end of its life

24. System and organ

(24)	System	Organ
	Consists of many organs	Consists of many tissues

25. Organ and tissue

(25)	Organ	Tissue
	Consists of many tissues	Consists of many cells

26. Amoeba and bacteria (In terms of: The presence of genetic material).

(26) Point of comparison	Amoeba	Bacteria
The presence of genetic material	It exists surrounded by nuclear membrane separating it from cytoplasm	It exists in the cytoplasm not surrounded by nuclear membrane

27. Yeast fungus and mushroom fungus (In terms of: The number of cells - Nucleus structure).

(27) Points of comparison	Yeast fungus	Mushroom
The number of cells	Unicellular	Multicellular
Nucleus structure	Eukaryotes	Eukaryotes

28. Corn and human (In terms of: Nutrition pattern).

(28)	Corn plant	Human
	Autotrophic organism producer	Heterotrophic organism (consumer).

29. Photosynthesis and cellular respiration (In terms of: Input substances – Output substances - Reaction equation).

(29) Points of comparison	Photosynthesis	Cellular respiration
Involved substances	Water, mineral salts and carbon dioxide	Glucose and oxygen gas
Produced substances	Glucose and oxygen gas	Water and carbon dioxide gas
The reaction equation	Water + Carbon dioxide + Energy → Glucose + Oxygen	Glucose + Oxygen → Water + Carbon dioxide + Energy

Question 7 various questionthe scientific term

1. Study the two opposite figures, then conclude:

1) **The atomic number of each atom.**
2) **The mass number of each atom**

	Figure (1)	Figure (2)
1)Atomic number	8	12
2)Mass Number	16	24

2. Study the following figures, then answer the questions

1) **The opposite figure: represents a section in the modern periodic table**
   - **What are the names of the element blocks indicated by the letters (X), (Y) and (Z)?**
     - **(X: s-block), (Y: d-block), (Z: p-black).**
   - **How many groups are in each block**
     - **(s: 2), (d: 10), (p:6)**

3. The opposite figure shows the combination of one molecule of element (X) with two molecules of element (Y) to form one methane molecule:

(1) **What is element (X)? State its block in the periodic table.**
- **Carbon/p-block**

(2) Determine: :

1- The physical state of element (X) and molecule (Y).
   - Element (X): Solid.
   - Molecule (Y): Gas.

2- The type of the formed compound, with explanation
   - Organic compound / Because it is formed by the combination of carbon with hydrogen

4. From the opposite figure

(1) What is the name of the device shown in the figure? What is its use?
   - Hoffman voltameter / It is used to electrolysis acidified water with sulphuric acid into its elements (hydrogen gas and oxygen gas).

(2) Write the items indicated by the numbers 1 and 2.
   1. Hydrogen gas
   2. Oxygen gas

5. From the opposite figure

(1) Determine the atomic number of element A, knowning that it is located in the 2nd period
   - 6

(2) Determine the type of the bonding in this compound
   - Covalent bonding

(3) Is this compound an organic compound? Explain the reason
   - Yes / Because atom (A) represents a carbon atom and is binded to hydrogen and oxygen atoms

6. The opposite figure shows an electroscope after the body (X) has touched its metal disc

(1) What is the charge of body (X).
   - The charge of body (X) is negative

(2) What happens when

(1) positively charged object is brought close to the electroscope disc.
   - The divergence of the electroscope's leaves decreases

(2) A negatively charged object is brought close to the electroscope disc
   - The divergence of the electroscope's leaves increases

7. In the opposite figure, magnet (1) can attract a nickel disc at a distance of X cm, while magnet (2) can attract the same disc at a distance of Y cm Which magnet is stronger? Explain
   - The magnet (2) / Because the magnetic field of magnet (2) is stronger than that of magnet (1)

8. The opposite figure represents the orbits of some planets around the Sun

(1) What are the two factors affecting the gravitational force between the Sun and planet (X)?
   - The distance between the centers of the two objects.
   - The masses of the two objects

(2) Assuming the mass of planet (Y) equals the mass of planet (Z), Which planet has a stronger gravitational force with the Sun? Explain.

- Planet (Y) / Because the distance between the center of planet (Y) and the sun is less than the distance between the center of the sun and planet (Z), and the attractive force increases as the distance between the centers of the two objects decreases.

9. The opposite figure represents the structure of a plant cell.

Write the number indicating:

(1) A structure that is unique to the plant cell. (3)

(2) A structure that is shared with bacterial cell. (2),(5)

(3) A structure that is shared with both animal and bacterial cells (5)

(4) A structure whose size differs compared to that of the animal cell. (1)

10. The opposite figure represents the structure of an animal cell Write the number indicating:

(1) A structure unique to the animal cell (7)

(2) Organelles shared with both plant and bacterial cells (4)

(3) A structure absent in bacterial cells (7) , (1) , (2) , (6) , (3)

11. The opposite figure shows one of the devices used in hospitals

(1) What is the name of this device, and what is its function

- Kidney dialysis
- Berfication of toxic material

(2) What is the organ does this device mimic its function?

- Kidney

12. The opposite figure shows one of the technological methods recently developed by human:

(1) What is the name of the technological method shown in the figure, and which vital process does it mimics?

- Artificial photosynthesis / Photosynthesis process

(2) Write what the symbol (X) represents.

- Artificial leaves

(3) What are the substances needed for this technological method to do its function

- Hydrogen and carbon dioxide gases

(4) What impact does this technological method have on the environment?

- Reducing global warming

13. The two opposite figures show two harmful microbes to human health

(1) What are the names of the microbes (1) and (2)?

- Microbe (1): Entamooba Histolytica.
- Microbe (2): Salmonella Typhi bacteria.

(2) Classify each microbe individually based on what you have studied

- Microbe (1): Harmful unicollular eukaryotic microbe belongs to protozoa.
- Microbe (2): Harmful unicellular prokaryotic microbe.

(3) What is the disease which is caused by each microbe?
Explain
1- How each of them is transmitted to humans
2- Symptoms of the disease caused by each of them
3- How to treat the disease caused by each of them.

- Microbe (1): Causes dysentery disease (Amoobic dysentery)
- Microbe (2): Causes typhoid fever diseaso.
- Using antiprotozoa drugs
- Using antibiotics

14. Study the opposite diagram that shows an old tool, and answer the following

a. What is the name of the tool?
b. Mention the use of this tool.

- An ancient solar clock used to determine time based on the length and direction of the shadow resulting from the apparent motion of the sun

15. Study the following figures, then answer the questions

(2) The opposite figure represents the different phases of the moon

3- Arrange these phases according to their succession of appearance from the beginning of the lunar month.

- 6) → (7) → (8) → (1) → (2) → (3) → (4) → (5)

4- What is the name of the moon phase in each of these shown cases

- (1): Full Moon.
- (2): Wanning Gibbous.
- (3): Last quarter
- (4): Wanning Crescent.
- (5): New Moon.
- (6): Waxing Crescent
- (7): First quarter
- (8): Waxing Gibbous

(A) Complete the following sentences

(1) (Noble gases) ,(Halogens.)
(2) (Mixtures) ,(Compound) .
(3) (Carbon)
(4) (Genetic material) ,(Bacteria (prokaryotes)

(B) The opposite figure shows a section of the modern periodic table:

1. (X:11)
   (Y:12)
2. (A):2
   (C):2A

(C)What is the result of each of the following

1. The activity of lactic acid bacteria continues, leading to the production of more lactic acid, which increases the acidity of yogurt.
2. The fungus kills the bacteria
3. The Earth's gravitational field intensity decreases.

(A) Choose the correct answer:

1. 2,8,7	2. (c)	3. (c)	4. (b)

(B) Write the scientific term for each of the following statements

1. Neutron	2. silicon	3. satellites

(C)Compare between dysentery and typhoid fever "in two points only".

Dysentery disease	Typhoid fever disease
Caused by Entamoeba Histolytica	Caused by Salmonella Typhi bacteria
Treated with antiprotozoal drug	Treated with antibiotics
(Or any other correct answer)	

(A) Choose the odd word out, then write the relation between the rest:

(1) Amoeba / Bacteria / Yeast / Bread mold.
- Bread mold. (unicellular organisms)

(2) Saturn / Venus / Jupiter / Neptune.
- Venus (outer gaseous planets)

(3) New moon / Waxing crescent / First quarter / Waxing gibbous
- (New moon (moon phases in the first half of the lunar month)

(B) What happens when:

1. Each part forms a new magnet with two poles, one of them is North and the other is South.
2. The atomic number increases by 1
3. The weight of the object becomes zero.

(C) The figure shows an electroscope after object (X) touched its metal disc:

1. Negative charge
2. The leaves of the electroscope turn applicable

Model 2

Question 1

Choose the correct answer

1. Plasma membrane	2. methane: CH_4	3. (X) and (y).	4. Full moon

(B) Mark (✓) or (x) for each statement, with correction

1. ×	2. ✓	3. ×

Complete the following equation:

Glucose + oxygen + co_2 + Water + Energy

Question 2

(A)Complete the following sentences:

(1) (4) ,(1A)

(2) (waxing Gibbous) ,(Wanning Gibbous).

(3) (Compass) , (Sundial)

(4) (Brone) , (mercury)

(B)Choose the odd word (or phrase) out, and mention the relation between the rest:

1. Rust (physical properties)
2. Copper (Magnetic materials)
3. Orbits (subatomic particles)
4. Yeast fungus (Multicellular organisms)

(C)A plant with white flowers had its roots placed in red-colored water for two days:

(1) What changes occurred after two days? (flower turn red)

(2) When the stem of the plant was cut transversely, it was observed that part (X) was colored red, while part (Y) was not. What are the names of (X) and (Y)

- (X):xylem tissue
- (Y):phloem tissue

Question 3

(A)Write the scientific term for each of the following statements:

(1). (Compounds)

(2) (Magnetic field)

(3). (Prokaryotes)

(4). (ionic compounds)

(B) Write the number of each of the following:

(1). (118)

(2): (2)

(3).(2)

(C) (2kg)

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9